



A STUDY OF NON-URGENT UTILIZATION OF THE EMERGENCY ROOM
AND ITS RELATIONSHIP TO ACCESS TO CARE

AT

KIMBROUGH ARMY COMMUNITY HOSPITAL
FORT GEORGE G. MEADE, MARYLAND

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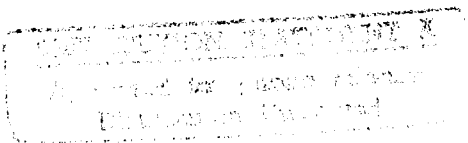
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ABSTRACT

The transition of the military health service system to managed care has required every military medical treatment facility to take a critical look at how and where care is provided. To remain viable in a managed care environment, Kimbrough Army Community Hospital (KACH) must ensure that the health care provided is in the most cost-effective setting. It is well documented in the literature that a significant amount of care provided in the emergency room is both inappropriate and costly. Therefore, under the managed care initiative it is essential that visits to the ER be minimized to those requiring emergent and urgent care. This shift to managed care required ER utilization to be studied. This study determined the prevalence of non-urgent utilization of the ER at KACH and identified why non-urgent patients choose to utilize the ER. On the basis of the findings a primary care system was recommended to decrease non-urgent utilization of the ER at KACH and improve access to care. Components of the system include: use of a fast-track triage system; use of a telephone triage system; extending clinic outpatient hours of operation to evening and Saturday; and providing education in the form of self-care medical manuals.

CHAPTER 1

INTRODUCTION

In an attempt to control the rising costs of health care, the military health care system began to initiate its transition to managed care on October 1, 1993.

This shift to managed care is requiring the military health service system to change the way it does business. Under the managed care initiative, every military treatment facility (MTF) will be challenged to provide health care that is both cost effective and maximizes productivity. MTF commanders will be given the resources, authority, and flexibility to execute their healthcare mission. This local accountability, with centralized policy and oversight, means that MTF commanders will be accountable for health care costs and access for all beneficiaries in their defined catchment area.

Under managed care, the military health care system must be competitive with the civilian managed care organizations if it is to remain viable. The

military health care system must increase its efficiency while improving access. The challenge facing the MTF commander will be to provide more care to more people in the most cost efficient manner.

This movement to a managed care program, or coordinated care as it is referred to in the Army Medical Department (AMEDD), means that Kimbrough Army Community Hospital (KACH) will be funded on a capitation basis rather than in response to workload. Under the capitation-based resource allocation methodology, the MTF commander is responsible for providing health care to the catchment area population for a fixed amount per beneficiary. In the past, under a workload funded budget, the incentive was to treat and hospitalize as much as was medically appropriate. The more admitted, the more treated, the more spent, and the more the organization was rewarded with increased resources. This shift from a workload driven budget to a capitated-based budget will change the incentives.

Under capitation there is no financial incentive to provide more costly care than is clinically necessary. Capitation makes the MTF commander responsible for providing all health services, and incentives exist to ensure that care is provided in the

most cost-effective setting, each episode of care is effectively delivered, and the volume of services provided are carefully monitored. Unnecessary services and inappropriate levels of care are discouraged because they unnecessarily increase the cost of patient care. More specifically, in order to profitably manage a capitated-based funding budget, the MTF commander must be able to deliver care as cost-effectively as possible. It is well documented that emergency room (ER) care is one of the most expensive types of care (Walsh, 1990; GAO, 1993). Under the managed care initiative, it is essential that visits to the ER be minimized to those requiring emergent or urgent care. Research has demonstrated that a significant amount of civilian and military ER treatment is for non-urgent care (Walsh, 1990; White-Means and Thornton, 1989; McNamara, Witte, and Koning, 1993). Use of the ER for non-urgent care places a significant unnecessary financial burden on the hospital, clearly wastes valuable finite resources, and violates capitation principles. Simply stated, higher ER utilization rates translate to a significant consumption of costly ER resources. According to the Patient Administration Division, KACH, in Fiscal Year (FY) 1992 over 10

percent of the total number of ambulatory care visits at KACH were ER visits.

An ER is set up to evaluate and stabilize patients requiring immediate care. Treatment for non-urgent conditions in an ER setting is more expensive because of the hospital's costs for acquiring and maintaining specialized equipment and the cost for highly trained ER staff 24-hours a day. Additionally, non-emergency care decreases the quality and continuity of care received, since ERs are not designed to provide ongoing primary care.

According to a report by the General Accounting Office (GAO), an ER visit can cost two to three times the cost for a primary care provider in an outpatient clinic (GAO, 1993). In a 1993 report published by the Health Care Advisory Board (HCAB), the financial burden that inappropriate ER care places on a hospital is staggering; a typical 400-bed hospital spends at least \$5.6 million annually caring for non-urgent ER patients (HCAB, 1993). The HCAB estimates that hospitals throughout the Nation spend over \$14.1 billion on inappropriate ER visits.

At KACH, as reported by the Medical Expense and Performance Reporting System (MEPRS), the cost per visit for an ER visit in FY 1993 was \$175.33, while the

cost per visit for a Primary Care/General Outpatient Clinic (GOC) visit was \$79.41 (MEPRS, 1993). At \$175.33 per visit and a total of 24,230 visits, the total cost for ER visits in FY 1993 was \$4,248,245. This compares to a total cost for Primary Care/GOC visits of \$2,552,237 for FY 1993 (32,140 total visits multiplied by the cost per visit of \$79.41). While the ER services at KACH are not two or three times the cost of a Primary Care/GOC visit, in FY 1993 ER services did cost 60 percent more than did Primary Care/GOC costs.

While many question the validity of MEPRS data, the Navy Medical Information Management Center (NMIMC), which uses a more comprehensive and accurate information database system to track and report cost per ambulatory visit, reported that the ER is the most expensive ambulatory care visit. In FY 1992, the average cost per ER visit for all Naval hospitals operating 50-99 beds was \$171.65. This compares to an average cost per ambulatory visit of \$87.62 for a pediatric visit, \$98.68 for a primary care/acute care visit, and \$136.03 for an orthopedic visit (Appendix 1).

Therefore, substantial savings could be realized by redirecting non-urgent visits to more appropriate and less costly sources of medical care. Patients with

non-urgent problems that come to the ER reflect inappropriate use of the ER as well as the unmet need for appropriate alternate sources of care. Many ER physicians contend that if primary care clinics were more readily available for routine care, overcrowding and long ER waits could be greatly reduced as well (Greene, 1992).

The ER at KACH is a newly renovated state-of-the-art nine bay/room Joint Commission on Accreditation of Health Care Organizations (JCAHO) - approved Level 2 ER designed to care for patients with acute medical problems who cannot wait to be seen by a physician in an outpatient clinic or setting. To be in compliance with JCAHO Level 2 standards, the ER at KACH is staffed 24-hour a day with at least one experienced physician, one to three registered nurses, and a sufficient number of other nursing personnel. Specialty consultation is also available within 30 minutes by members of the medical staff (Appendix 2). The mission of the ER is to provide a medical evaluation and, when appropriate, medical treatment for every patient who presents on a 24-hour a day, seven day a week basis. Diagnostic radiology services and clinical laboratory services are available at all times.

The ER physicians at KACH are contract physicians that work for Coastal Government Services. On March 1, 1994, KACH entered into a \$1.1 million two year contract with Coastal Government Services to provide ER physician staffing. The contract requires Coastal Government Services to provide 5.81 full time equivalent (FTE) physicians. The contract requires the contractor to provide 24-hour ER coverage with overlap, seven days per week.

When the patient initially arrives in the ER he or she signs in at the registration window and informs the registration clerk of the presenting problem. Patients presenting with urgent problems are immediately seen by the triage nurse who takes a brief history, measures vital signs and orders any lab or X-rays appropriate to the complaint. If the patient does not present with a life-threatening problem then after signing in at the ER reception area, the patient is seated in the ER waiting area. The non-urgent patient is initially seen by a qualified triage nurse, who asks why the patient came to the ER, what medications the patient is currently taking, any allergies the patient has, and then measures vital signs (blood pressure, pulse, respirations, and temperature). The triage nurse is

credentialed to order necessary laboratory tests, X-rays, and other types of tests.

Once triaged, the non-urgent patient registers with the clerk and provides information necessary to begin an ER record (Appendix 3). If a treatment room is available the patient is taken to a treatment room. If a room is not available the non-urgent patient is asked to return to the waiting room. When a treatment room is available, the nurse documents the assessment on the ER record, informs the physician of the assessment and the patient is then seen by the physician.

The medical evaluation performed by the ER physician is directed at the primary presenting problem. If the problem can be diagnosed and treated in the ER, the physician will do so. However, because in most cases the physician is not familiar with the patient's medical history, the physician may need to obtain and review the patient's medical record, if available. The physician may also consult with a specialist or may determine that additional testing may be necessary to determine a diagnosis. Once the medical testing, evaluation, and treatment are completed the patient is either: released with no scheduled medical follow-up, released with a medical

consultation referral to a specific clinic or provider (Appendix 4), or admitted to KACH or another medical treatment facility.

Patients are seen according to the seriousness of their medical condition. The triage nurse uses the American College of Emergency Physicians (ACEP) guidelines to categorize and triage the patient as either emergent, urgent, or non-urgent (Appendix 5). Emergent and urgent patients, such as critically ill trauma patients and patients requiring intensive care, are always seen before patients with non-urgent problems. Generally, all non-urgent patients are seen in the order in which they present to the ER. All patients brought in by ambulance do not stop at the triage nurse or the registration desk; they are taken directly into the ER.

The ER is physically located in the proximity of the hospital's ambulatory care clinics. Specifically, the ER is located next to the GOC (Appendix 6). The ER and GOC have separate patient entrances; however, they share a common patient waiting area and they have a staff entrance between the two clinics. Both the ER and the GOC operate and staff separate registration/reception desks and maintain separate triage set-ups.

Care at KACH is primarily accessed by presenting to the ER, by scheduling an appointment through Central Appointments, or by going to the GOC during their scheduled walk-in hours of 0630 to 1500, Monday through Friday. Generally, appointments made through Central Appointments for other specialties are scheduled two weeks in advance. On any given day, approximately 500 requests for appointments are made through Central Appointments. However, on the average, 100 (20 percent) requests will not be scheduled and callers are told to call back at a specific date, when the next two weeks of appointments are posted (Griss, 1994). Even after calling back, many will not be able to schedule an appointment.

One additional way for pediatric patients to access care is through a telephone triage system that operates out of the Pediatric Clinic from 0800 to 1600, Monday through Friday. Parents call the Pediatric Clinic and speak to a trained medical receptionist who asks for demographic information on the patient and the child's presenting problem. The receptionist documents this on a Standard Form 600 (Chronological Record of Medical Care) MEDDAC Overprint 263 (Pediatric Telephone Triage) (Appendix 7). The receptionist informs the parent that this information will be provided to a

pediatrician and that the pediatrician will call the parent back promptly. In a "life-threatening" situation (i.e., the child is in cardiac arrest) the receptionist informs the parent to telephone 911. The receptionist provides the information to the designated on-call pediatrician who calls the parent back and provides medical advice on the telephone. Depending on the presenting problem the pediatrician will either provide home care advice only, ask the parent to bring the child in to the Pediatric Clinic, or refer to parent and child to the ER. According the Head Nurse, Pediatric Clinic, the clinic receives approximately 20 calls per day, of which 40 percent are managed with home care advice only, 55 percent are asked to come in to the clinic, and the other 5 percent are referred to the ER.

In an attempt to reduce the bottleneck created by people calling a second time to Central Appointments, the hospital recently began placing individuals on a waiting list for four of the clinics: Dermatology, Urology, Orthopedic, and OB/GYN. Individuals calling for appointments at these four clinics that are told the appointments are booked provide their name and telephone number to the appointment clerk who puts them on a priority waiting list, depending upon their

beneficiary category. The order of priority is: active duty, family members of active duty, retirees, and family members of retirees. When an appointment becomes available the appointment clerk calls the patient and informs him or her of the appointment time and date. According to the Supervisor for Central Appointments, on average, individuals placed on a waiting list are called back with an appointment within two to four weeks of being placed on the waiting list (Criss, 1994). The appointment provided to them is usually within two to four weeks of the day they were called back.

A pilot project was also recently begun to decentralize Central Appointments. This was another attempt to improve the efficiency of the patient appointment scheduling process and to improve access to care. The Pediatric Clinic was chosen as the test clinic. A Central Appointments clerk has been physically located in the Pediatric Clinic and she schedules all follow-up appointments for the clinic. Initial Pediatric Clinic appointments however, continue to be made through Central Appointments.

Follow-up appointments are scheduled through Central Appointments and by the individual clinic. All clinic hours of operations are from 0730 to 1600,

Monday through Friday. The Pediatric Clinic is the only clinic that operates evening hours. The clinic's evening hours of operation are from 1645 to 2200, Monday through Friday. The evening clinic is staffed by a CHAMPUS Partner pediatrician. Currently, none of the outpatient clinics are open on weekends.

This study identified the percentage of patients treated in the ER at KACH that are non-urgent. Once that percentage and population was known, the researcher identified non-urgent user behavior. Specifically, the study examined why these individuals choose to utilize the ER when less costly more appropriate alternative sources of care are available at KACH. Recommendations have also been made on how to reduce the non-urgent use of the ER, thus maximizing access to care. Access to care looked at accessibility to health care services and was defined as appointment and referral system, hours of operation, and alternative sources of care.

Conditions Which Prompted the Study

The implementation of funding via capitation requires KACH to take a critical look at how and where care is provided. The ER is one of the most expensive

types of care to provide. The cost to staff and maintain the ER is substantial, and while ER usage has not increased over the past year, patient complaints over ER waiting times remains a significant problem. Therefore, it is essential that utilization of the ER be studied. Additionally, while the recent proactive steps taken by the hospital command to improve access to care have improved access, the number of people unable to access the system for primary care appointments continues to be an ongoing issue. Therefore, steps must be taken to ensure that use of the ER is for emergent and urgent care and to make changes that will improve access to appropriate sources of primary care.

Statement of the Problem

There are two problems or questions that are being investigated in this study. The first question asks: is there inappropriate utilization of the ER? If so, this is costly to KACH and is a waste and misuse of valuable resources. The second question asks: if there is inappropriate utilization of the ER why are non-urgent patients choosing to use the ER instead of going to an outpatient clinic?

Literature Review

Emergency medicine was formally established in the 1970's as a specialty to evaluate, stabilize, and treat illnesses and injuries that require immediate attention (Nordberg, 1990). Consequently, almost all ERs are set up to treat and receive patients with a wide range of illnesses and injuries 24-hours per day. Because patients need no appointment and access is generally not restricted, conditions treated range from life threatening emergencies to non-urgent treatments for colds and minor lacerations.

While the ER was intended to provide comprehensive and convenient care 24-hours per day, it has evolved into an expensive acute care and minor care clinic. It is widely recognized that hospital ERs provide a substantial amount of non-urgent, primary medical care. Numerous studies have demonstrated that at many hospitals the majority of patients who use the ER receive treatment for non-urgent conditions such as trivial problems like sore throats, coughs, suture removals or minor medical problems (Kovar, 1982). Visits to the hospital ER have increased dramatically in the U.S. over the past three decades. From 1955 to 1970 alone, ER visits increased by 312 percent

(Petrick, 1973). More recently, Nationwide ER visits have been rising 3 percent to 5 percent per year since 1985 (Greene, 1992). This use of the ER by persons in need of primary care is problematic because it is an inappropriate use of an expensive type of care.

The substantial amount of non-urgent ER care often means long waits for a patient to be seen by a physician (Howell et al, 1990; GAO, 1993). As a result, a number of studies have looked at ER patient waiting times.

For example, in a study conducted at an Air Force hospital that compared patient waiting times, found that the average amount of time it took for a patient to be seen by a physician was 25 minutes and the time to disposition averaged 71 minutes (Howell et al., 1990). It must be noted that the times in this study reflect the average times for all categories of ER patients and this study does not look specifically at non-urgent patient waiting times.

However, studies that specifically looked at non-urgent waiting times focused on large urban ERs. In these studies the average wait times for non-urgent patients is reported to be between one and two hours (Kerr, 1987; Nordberg, 1990; Pane et al, 1991). These urban studies attribute excessive non-urgent care wait

times to the large number of uninsured and Medicaid insured patients who utilize the ER as their health care provider. This currently is not an issue in military medical treatment facilities because every eligible beneficiary is authorized to receive medical care.

Several studies looking at utilization of the ER in the civilian sector have been conducted over the past two decades. All of the studies suggested that a significant proportion of patients who came to the ER should have seen either a primary care provider or did not require to be seen by a health care provider at all. The percentages of non-urgent users in the ER varied from a low of 35 percent to a high of 75 percent (GAO, 1993). In a recent comprehensive study conducted by the GAO, of the nearly 100 million visits to the ER in 1990, almost 43 percent were assessed as non-urgent conditions (GAO, 1993). These were conditions that could have been treated in a physician's office or could have been treated at home with over-the-counter medications. A study conducted by the Health Care Advisory Board (HCAB) found that over 75 percent of ER visits could have been more appropriately handled in a physician's office (Health Care Advisory Board, 1993). In a study that looked at the ER as a primary care

provider, the President of the American College of Emergency Physicians stated that the ER has become the "safety net for accessing care (Greene, 1992)." According to him, people come to the ER to be triaged to the most appropriate clinical setting.

The GAO study concluded that people with non-urgent conditions often seek care in the ER because they had no access to other care when they wanted or needed medical care (GAO, 1993). The HCAB study reported that up to 50 percent of the non-urgent ER visits are attributable to the unavailability or lack of a primary care provider (HCAB, 1993). The other two most common reasons why patients visit the ER for non-urgent conditions reported by the HCAB was that the ER was more convenient (19 percent) and that the ER offered after regular provider office hours (19 percent). In the GAO study the most frequent reason given for non-urgent ER use was also that the patient did not have a primary care provider. Of the 43 million non-urgent ER visits in 1990 in the GAO study, 42 percent did not have a primary care provider. The second leading reason for non-urgent ER use, reported by 18 percent, was that it was offered after regular office hours (evenings and weekends) and was more convenience (easier or quicker to use).

In an unpublished study conducted in a military ER with a 100 bed Level 2 ER, the researcher concluded that 54 percent of the visits were for non-urgent care (Richardson, 1991). The researcher also determined that the two main reasons non-urgent patients utilize the ER is because they perceive their condition to be emergent and because of the inability to access available alternate sources of care. The author defined the inability to access alternative sources of care as: no appointments available and no evening or weekend outpatient clinic.

A number of civilian studies have also attempted to identify possible determinants of non-urgent ER use. Padgett and Brodsky, in a study conducted in 1992 found that the most common reason for non-urgent use of the ER was that other primary care was not available (Padgett and Brodsky, 1992). They concluded that the convenience and accessibility of the ER are powerful incentives to its heavy and inappropriate use. By providing sophisticated diagnostic and treatment services 24-hours per day, with no appointment or physician referral necessary, the ER is an appealing contrast to crowded clinics or inaccessible clinics where the wait for an appointment with a primary care provider can be weeks (Padgett and Brodsky, 1992).

Farmer and Chalmers, conducted a study in Britain that looked at the socio-demographics of non-urgent users of civilian ERs. They found that the highest usage was weekday mornings and weekends. The most frequent users were younger male patients. Distance was also a factor. The closer the person lived to the ER the more likely they were to use the ER.

Other research has attempted to identify specific characteristics about the non-urgent users of the ER. The assumption is that if socio-demographic characteristics are known about the non-urgent users then steps can be taken to direct these individuals to more appropriate sources of medical care. Buesching et al., in a study conducted in 1985, looked at inappropriate utilization by socio-demographic variables. They found that the subgroups with the highest inappropriate visit rates included: children aged 5 or younger (15.2 percent); those unable to identify a personal or primary care physician (14.1 percent); patients making visits during regular office hours (12.6 percent); and those failing to attempt to contact their primary care physician (12.4 percent) (Buesching et al., 1985).

In several of the studies the researchers have made proposals for reducing the non-urgent use of the

ER. Some advocate setting up a nurse triage system with an adjacent acute care clinic (Kerr, 1989; Olsson et al., 1986; Orr et al., 1991). Specifically, when the patient presents to the ER the patient undergoes a preliminary screening by a triage nurse who uses selective triage criteria to determine whether the patient's condition is emergent/urgent or non-urgent. If the patient is classified non-urgent, the patient is referred to the acute care clinic for treatment. One successful program was established at the St. Joseph's Hospital in Patterson, New Jersey. They established a hot line, answered by nurses in the ER, to direct patients with minor ailments to the appropriate clinic (Howland, 1993). The researchers recommend that by using such a triage system, the ER could once again focus on those requiring immediate care and the hospital would not continue to inappropriately use valuable resources. The study also showed that a triage system can be an effective method for reducing inappropriate utilization of the ER (Olsson et al., 1986).

The literature also revealed that a number of hospitals have reduced the number of inappropriate ER users by referring them to a less intensive source of

care (Greene, 1992, HCAB, 1992). Many of these hospitals have turned to redirection, or fast tracking of these patients by immediately evaluating patients with triage techniques and sending the non-urgent patients to a more appropriate source of primary care, such as an acute care/minor care clinic. Hospitals that have implemented a fast track system have reduced inappropriate ER patient volume by as much as 50 percent, reduced waiting times from hours to minutes, reduced ER cost of treatment in half, and improved the overall quality of care (Greene, 1992).

Other researchers have advocated the establishment of an "Advice Nurse" or health care advisor type service (Howland, 1993; Derlet and Nishio, 1990). Under such a program, the patient who is experiencing a medical problem would call a telephone number staffed 24-hours a day, seven days a week by a qualified triage nurse and explain to the nurse the symptoms/presenting problem. Using established screening criteria, the patient is directed to the appropriate type of medical care. The service can be set up in the ER or can be a separate number staffed by a nurse. Informed Access Systems (IAS), a company that provides a 24-hour telephonic advice nurse/doctor service, called

"FirstHelp", reported in an independent telephone survey conducted that 62 percent of the callers were "safely" directed to self care and 35 percent of those 62 percent said they would have otherwise gone to the ER (FirstHelp, 1993). They also reported a 99 percent user satisfaction rate. These findings are consistent with the findings of several other studies that have looked at the use of a telephone-based triage system (Pollard, 1992; Wilson et al., 1980). In addition to the findings reported by FirstHelp other studies have demonstrated that a physician-written triage algorithms system can be safely and effectively used by nurses, pediatric health assistants, and even minimally-trained medical receptionists.

Other studies did not support the use of a telephonic screening service. A study conducted by Kerr, expressed concern that patients whose primary language is not English, who are illiterate, elderly, or simply afraid, would be at a disadvantage when asked to explain their presenting problems (Kerr, 1989). He is also concerned that telephone medical conversations are less revealing than the customary physician-patient face-to-face encounter. However, that is why several of the studies that advocate the use of a telephone

screening system propose establishing conservative screening criteria to ensure that the patient's health is not inappropriately jeopardized (Howland, 1993; Derlit and Nishio, 1990).

Similar to a triage nurse, the study by the HCAB recommended the use of a primary care liaison as a way to minimize the use of the ER for primary care (HCAB, 1993). According to the study the role of the primary care liaison, a discharge nurse, is to educate non-urgent patients on the need to use primary care providers, and then the liaison actually connects them with appropriate local primary care providers. The underlying issue behind the use of the liaison is that most ER staffs lack the time and expertise to help patients access the primary care system. The result is that patients continue to return to the ER for the same or related problems. The HCAB study reports that hospitals that have utilized a primary care liaison have achieved astounding success in steering patients to primary care providers. They found that a liaison program convinces over 90 percent of patients to stop using the ER as a primary care provider.

In a study that surveyed Health Maintenance Organizations' (HMOs) access to ERs reported that every

HMO had in place a gatekeeper system to ensure appropriate utilization of the ER. The patients are required to telephone the "gatekeeper" and receive permission for ER access (Kerr, 1989). Virtually all the HMOs surveyed directed their members to skip calling the gatekeeper if a "life threatening" situation exists, and to proceed immediately to the ER for care. They provided every member with a brochure listing examples of life-threatening and nonlife-threatening conditions.

Another innovative approach to reduce non-urgent ER utilization reported in the literature is for hospitals to operate their own community outpatient primary care clinics (Greene, 1992). In Dallas, 861-bed Parkland Memorial Hospital operates a network of seven community primary care clinics that provide alternative services for non-urgent patients. Patients who go to Parkland's ER that are triaged as non-urgent are sent to an acute care or primary care clinic in their hospital for treatment. At that time they are educated on and referred to one of the seven community primary care clinics for follow-up services. They report that substantial savings have been achieved because visits to the primary care clinics cost on

average \$55, which is much less than the average price of \$125 per ER visit (Greene, 1992).

A number of health care studies have looked at the effect of self-care interventions as a way to reduce inappropriate utilization of medical services. Vickery et al. conducted a study on Medicare beneficiaries that looked at the impact of self-care on ambulatory care utilization, to include ER use (Vickery et al., 1988). In their study there was a 15 percent decrease in total number of ambulatory care visits in the experimental group as compared with the control group. They concluded that a health education program on self-care and individual decision making can effectively reduce inappropriate utilization while having no known negative impact on the quality of health.

An unpublished study by the Air Force looked at the effect that providing beneficiaries with a medical self-care handbook has on reducing unnecessary and inappropriate outpatient visits (U.S. Air Force, 1993). They conducted a pilot project at three Air Force bases, where they provided beneficiaries with a copy of the "Take Care of Yourself" self-care manual along with a 20 minute orientation on how to use the book. The results of their study revealed that in only six months

after the self-care manual had been distributed the percentage of inappropriate ER visits dropped by 28 percent. The results of their demonstration project showed the same type of results seen in other published research studies. They are currently studying the feasibility of expanding this pilot project.

The literature also identified other more extreme actions taken by hospitals to address non-urgent use of the ER. In one extreme case, a hospital denies treatment to patients whose medical conditions have been evaluated in an ER as non-urgent. This hospital refers the patient to less expensive and more medically appropriate sources of care for treatment. One such hospital that has implemented such a system is the University of California, Davis, Medical Center. In their ER, once the patient is triaged by a qualified nurse and determined to be non-urgent, the patient is told he or she will not be seen in the ER and is sent to a referral desk for a listing of area acute care clinics (Derlet and Nishio, 1990).

Finally, one other extreme type of measure reported in the literature involved voluntarily downgrading ER services to reduce the high volume created in part by inappropriate utilization (HCAB,

1990). The hospitals profiled in the literature downgraded their ERs from Level 2 units to Level 4 units. A Level 4 unit is not staffed by an in-house physician, renders only life saving first aid, and makes referrals to the nearest facility that is capable of providing the necessary care. Two hospitals cited indicated that downgrading their ERs has been successful in reducing sheer volume of non-urgent utilization. However, the authors caution that downgrading can also have a negative impact in number of admissions as well as reduce the hospital's cardiac services.

Purpose of the Study

This study focused on non-urgent utilization of the ER. A preliminary survey was conducted to determine the percentage of patients treated in the ER at KACH that were non-urgent. Wait times were also tracked to determine if non-urgent usage was contributed to "bottlenecks" in the ER, which decreases productivity and efficiency. Based on the findings from the preliminary survey a final study survey was administered that identified non-urgent user behavior. Demographics of the non-urgent were identified to determine whether there was a difference

between the demographics of non-urgent and urgent/emergent ER users. Based on the findings from the final study survey, recommendations were made for how best to redirect the non-urgent care users to a more appropriate level of care. The ultimate objective goal of the study was to make recommendations that would improve appropriate access to care.

CHAPTER 2

METHODS AND PROCEDURES

This study focused on non-urgent utilization of the ER at Kimbrough Army Community Hospital (KACH). A preliminary study was initially conducted that identified the percentage of patients treated in the ER at KACH with non-urgent medical conditions. Waiting times were also charted to determine if non-urgent usage contributed to excessive waits in the ER. Following the preliminary study, a final study survey was administered that determined the demographics of the non-urgent user and identified non-urgent user behavior. A comparison of demographics was also made between the non-urgent and emergent/urgent ER user.

Study Design

The Standard Form (SF) 558 (Emergency Care and Treatment Medical Record) (Appendix 3) was used along with the Department of the Army Form 3889 (Nursing Unit 24 Hour Report) (Appendix 8) to determine the percentage of ER users by category: emergent, urgent, and non-urgent. The American College of Emergency

Physicians (ACEP) endorsed guidelines were used by the triage nurse at the time of triage to determine whether the patient's condition (illness or injury) was emergent, urgent, or non-urgent. The triage nurse indicates the patients' category on the SF 558. To verify that the patients were categorized and triaged appropriately, the Chief, Emergency Medical Service, conducted a 100 percent retrospective record review, again using the ACEP guidelines.

Non-urgent patient waiting times was obtained from the preliminary survey administered in November and December 1993. The demographics of non-urgent patients and non-urgent user behavior was obtained from the final survey administered in January and February 1994.

Preliminary Survey

A preliminary survey was initially administered in November and December 1993, and based on the findings from the preliminary survey a final study survey was developed and administered in January and February 1994.

The preliminary survey was administered to determine the percentage of patients presenting to the ER that were categorized as non-urgent and to determine the amount of time that a patient spends in the ER.

The preliminary survey also identified the socio-demographics of non-urgent ER users, and provided input on the development of the final survey.

More specifically, the preliminary survey looked at non-urgent patients in terms of: gender; age group; time of day the patient presents to the ER; amount of time it takes to be logged-in; amount of time it takes to be triaged; amount of time it takes to be seen by a physician; total amount of time spent in the ER; amount of time it takes for lab work requested to be completed; and amount of time it takes for X-rays requested to be completed.

The preliminary survey was developed with the assistance of the Chief, Emergency Medical Service, the Chief Nurse, Emergency Medical Service, Deputy Commander for Administration, and the Assistant Chief, Department of Nursing. A pilot study of the survey instrument was conducted by administering it to 25 randomly sampled non-urgent ER users during a five day period in October 1993. Modifications to the survey were made based on the input from the random sample as well as from those individuals providing assistance with the development of the survey instrument (Appendix 9). Once the preliminary survey instrument was finalized it was randomly administered in the ER on two

separate two week periods: 1 through 14 November 1993 and 7 through 20 December 1993. A total of 375 surveys were randomly administered to the 1490 non-urgent ER patients that presented to the ER during the periods surveyed. Of the 375 surveys randomly administered, 269 usable surveys were returned (response rate of 72 percent). Therefore, the sample analyzed for the preliminary survey consisted of the 269 randomly sampled non-urgent patients. The study sample was obtained from a representative selection of service days throughout the 24-hour day.

Final Study Survey

The second survey, the final study survey, identified motivation for ER usage by patients with non-urgent illnesses, and compared the socio-demographic characteristics of the non-urgent ER users with those of the emergent/urgent population. Every fourth individual seeking medical care in the ER, that was categorized by the triage nurse as non-urgent, was asked by the registration clerk to complete the study survey during two separate two week periods in January and February 1994.

The final survey instrument was modeled after the preliminary survey. The survey instrument was reviewed

by a group consisting of the Deputy Commander for Administration, Chief, Emergency Medical Service, Head Nurse, Emergency Medical Service, and walk-in ER patients. A pre-survey was randomly administered to a representative sample of non-urgent ER users to ensure that it was clearly written. Changes were made based on the feedback from the pre-survey (Appendix 10).

For the final study survey, a total of 375 surveys were randomly administered to the 1504 non-urgent ER patients that presented to the ER during the periods surveyed. Of the 375 surveys administered, 296 usable surveys were returned (response rate of 79 percent). For the final study survey, the sample group consisted of 296 non-urgent users of the ER, who completed the survey. The sample group of 296 represented almost 20 percent of the non-urgent users during the periods surveyed. The study sample was obtained from a representative selection of service days throughout the 24-hour day, looking specifically at all weekday shifts and weekend shifts (Appendix 11).

The comparison group (control group) for the final study survey consisted of every patient seeking care in the ER categorized as emergent or urgent, during the same two separate two week periods surveyed for the sample group. The control group consisted of 158

emergent/urgent users. This represents 10.5 percent (158/1504) of the ER users during the periods surveyed. Comparison group data was confined to secondary data and was obtained from the demographic section of the SF 558 Appendix 3). The comparison group of ER patients was created to compare the socio-demographics of the urgent/ emergent patient parameters with those of the non-urgent users.

Data Collection

Data was collected and coded for both the preliminary and final study survey. A data base file was constructed and the data was input into the data base file. The data for the preliminary survey and the final study survey was coded by the researcher, and was input by the researcher with the assistance of a clerk. An independent reviewer conducted spot checks on every tenth survey to verify the accuracy of the coding. The researcher conducted random spot checks on the data input to verify the accuracy of the data input. When the data entry was completed, the data base file was read into the Statistical Package for the Social Sciences (SPSS) computer software program and the descriptive and inferential statistics were computed.

Preliminary Survey Data Collection

For the preliminary survey instrument, the ER registration clerk presented the survey instrument to every fourth non-urgent patient at the time they presented to the ER. The patient was asked to complete the top portion of the survey and then to provide it to the triage nurse at the time of triage. The survey asked the patient to provide the following information on the survey: last four numbers of the patient's sponsor's social security number; the time the patient arrived in the ER; patient's age group; and the patient's gender. The triage nurse indicated on the survey the date, triage time, and X-ray and/or lab time-out if these diagnostic tests were ordered, and then attached the survey instrument to the SF 558 (Appendix 3). The SF 558, with the attached survey, were then given to the registration clerk who indicated the patient log-in time and then registered the patient. The registration clerk then placed the SF 558 and the attached survey in the ER chart and the chart was placed in the non-urgent triage box. The nurse then pulled the chart, provided it to the physician, who indicated the physician time on the survey. If diagnostic tests were ordered, at the time that the

nurse placed the diagnostic results in the patient's chart, he or she indicated the X-ray and/or lab time-in on the survey. When the physician wrote the treatment instructions to the patient and signed the SF 558, the physician indicated the release time on the survey. The chart was then provided to the registration clerk who placed the completed survey in a reception desk drawer.

Because the accurate completion of the survey required participation by the ER staff, the researcher provided six in-service training sessions to the staff. In-services were provided to each of the different shifts three days before the first two week period surveyed and to each shift two days before the preliminary survey was administered for the second two week period surveyed.

The last four numbers of the patient's sponsor's social security number were used to allow for tracking, and it ensured patient confidentiality was maintained. The time the patient arrived in the ER was coded by shift and was a nominal variable: 1 = 0701 to 1500; 2 = 1501 to 2300; 3 = 2301 to 0700. Patients's age group, an ordinal variable, was coded by age category: 1 = 0 to 14 years; 2 = 15 to 40; 3 = 41 to 64; and 4 = over 65. Patient's gender, a dichotomous variable, was

coded 1 if male, 2 if female. Triage, log-in, physician, X-ray, lab, and release times were subtracted from the time the patient arrived in the ER.

The SF 558 and the Nursing Unit 24 Hour Report were used to determine the percentage of ER users by category during the two separate two week periods surveyed in November and December 1993. The researcher reviewed the Nursing Unit 24 Hour Report for each day surveyed, and from the nursing report calculated the number of ER users by category: emergent, urgent, and non-urgent.

Descriptive statistics and frequency data were calculated and analyzed for the preliminary survey (Appendix 12). The results of the preliminary survey were used to identify the percentage of patients treated in the ER that were non-urgent. Although not the focus of the preliminary survey, results were also used to determine the average amount of time a non-urgent patient spends in the ER. Because of the sizable decrease in the waiting times from the October survey to the November survey, attempts were also made to identify any history effects. Managerial changes (history effects) instituted are discussed in the Discussion Section of the research paper. A t-Test was computed for the waiting times on the two separate two

weeks surveyed to test whether the two population means were equal. This test was concerned with the change in the waiting times - the average difference in waiting times from the first two week period surveyed in November 1993 and the second two week period surveyed in December 1993.

Final Study Survey Data Collection

For the final study survey, the data from the study sample group was collected from every fourth non-urgent ER patient. The patient was provided the survey and asked to complete it upon presenting to the ER registration/reception window. The patient was instructed to place the completed survey in a box identified as "ER Survey Box" located on a table outside the ER reception window. Once a day the registration/reception clerk would collect the completed surveys from the box and place them in the reception desk drawer. As with the preliminary survey, in-service training was provided to each receptionist two days prior to administering the final study survey.

All of the variables coded for the final study survey were either nominal or ordinal level data. Time of day the patient arrived in the ER was a nominal variable and was coded based one of three shifts: 1 =

0701 to 1500; 2 = 1501 to 2300; and 3 = 2301 to 0700. Patient's gender was a dichotomous variable and was coded 1, if male, and 2, if female. Patient's age group was an ordinal variable: 1 = 0 to 14 years; 2 = 15 to 44; 3 = 45 to 64; and 4 = over 65. Patient's beneficiary category was a nominal variable and was coded: 1 = active duty; 2 = active duty family member; 3 = retired; 4 = retired family member; and 5 = other. Distance the patient lives from the ER was an ordinal variable and was coded as: 1 = reside on-post; 2 = reside 0 to 5 miles off post; 3 = reside 6 to 15 miles off post; and 4 = reside more than 15 miles off post.

The nine reasons that the patient decided to come to the ER instead of going to an outpatient clinic were nominal variables and were coded 1, if yes it was a primary reason for going to the ER, and 2, if no, it was not a primary reason. The last question on the survey, which asked people to make any comments or suggestions pertaining to the ER, was open ended and the anecdotal responses were not coded. All responses to this question are listed in Appendix 13. The majority of the comments had a negative tone.

The demographic data for the final study survey control group (emergent/urgent patients) was obtained from the SF 558. The researcher reviewed the SF 558

for every urgent and emergent user during the same two separate two week periods that the study survey was administered to the sample group of non-urgent users: 3 through 16 January and 1 through 14 February 1994. In order for a t-Test comparison of population means to be made between the control group (emergent/urgent patients) and sample group (non-urgent patients) variables, the control group data was documented and coded on the same final survey instrument that was administered to the sample group. With the exception of the distance the patient lives from the ER, the SF 558 provided all of the demographic information needed for the control group. Since the SF 558 provided the home and work address, the researcher used a copy of the Defense Medical Information System (DMIS) Zip Code map to determine the approximate distance the patient lives from the ER (Appendix 14). The Chief Nurse of the Emergency Department reviewed every SF 558 to verify the accuracy of the data collection.

The data for the control group (urgent/emergent) was coded on the survey in the same manner as the sample group (non-urgent patients). Since the urgent and emergent users (control group) were not actually administered the final study survey, the reason the

control group (emergent/urgent patients) choose to utilize the ER could not be elicited.

For the final study survey descriptive statistics and frequency data were tabulated for the study and control group (Appendix 15). A t-Test was computed using the SPSS to analyze the data and determine statistically significant differences among the means of the two groups.

CHAPTER 3

RESULTS

Preliminary Survey

A total of 1700 patients were seen in the ER during the preliminary period surveyed. Using the ACEP guidelines for determining what constitutes an ER visit, 87 percent, or 1490 of the 1700 individuals seen, were determined to be non-urgent patients.

On average, from the time the patient arrived in the ER seeking care, the non-urgent ER patient waited 24 minutes to be triaged. The minimum amount of time a non-urgent patient waited to be triaged was zero minutes, while the longest was six hours and 44 minutes. The average amount of time the non-urgent patient waited to be logged-in was 26 minutes. The minimum waiting time to be logged-in was one minute, while the longest amount of time was four hours and 42 minutes. The average amount of time it took for a non-urgent patient to be seen by a physician, from the time he or she first presented to the ER was one hour and 27 minutes. The minimum amount of time it took to be seen

by a physician was zero minutes and the maximum was five hours and 55 minutes. From the time of arrival to the ER until the time of release, the non-urgent ER user spent on average, a total of two hours and five minutes in the ER. The minimum amount of total time a non-urgent patient spent in the ER was 15 minutes, while the longest was nine hours.

With regard to laboratory tests and X-rays ordered, the average amount of time it took for laboratory work requested to be completed was 60 minutes. The minimum turnaround time for laboratory tests ordered was 10 minutes and the maximum amount of time was two hours and 25 minutes. For X-rays, it took on average 53 minutes to be completed. The minimum turnaround time for X-rays was five minutes, while the maximum amount of time was two hours and 15 minutes.

When the two separate two week periods surveyed were separated (November and December 1993) the average waiting time to be triaged for the first two week period surveyed was 31 minutes, and for the second two week period surveyed it was 17 minutes. The average amount of time it took to be logged-in for the first period was 30 minutes, while for the second 2 week period surveyed it averaged 21 minutes. The average amount of time it took to be seen by the physician for

the first two week period was one hour and 35 minutes, and for the second 2 weeks surveyed the average was one hour and 16 minutes. The average total amount of time spent in the ER was two hours and 18 minutes for the first period surveyed and was one hour and 49 minutes for the second period surveyed. Laboratory work averaged one hour and two minutes for the first two weeks and 53 minutes for the second two weeks. For the first two weeks it took X-rays an average of 55 minutes to be completed from the time they were requested and for the second two weeks surveyed it took an average of 46 minutes (Appendix 16).

The t-Test revealed that the following waiting time variables were statistically significant at the $p < .01$ level: triage time, log-in time; time it took to see a physician, and total time spent in the ER (Appendix 17). This indicates that the likelihood that the November 1993 and December 1993 population means are equal is less than one in 100 ($p < .01$). X-ray turnaround time variable was statistically significant at the $p < .05$ level. There was, however, no statistically significant difference between the November period surveyed and the December period surveyed, with regard to the laboratory turnaround time ($p = .178$).

The results of the t-Test confirm that the two population means are not equal at the alpha equals .01 level in several of the categories. The December 1993 non-urgent population were more likely to be triaged ($t = 3.57$; 16.5 minutes vs. 30.98 minutes), logged-in ($t = 2.77$; 20.62 minutes vs. 29.68 minutes), and be seen by a physician ($t = 2.70$; 76.18 minutes vs. 95.44 minutes) sooner and spend less total time in the ER ($t = 3.45$; 109.54 minutes vs. 138.45 minutes) than the November 1993 non-urgent population. The laboratory work ($t = .53$; 53.94 minutes vs. 59.57 minutes) and X-ray ($t = 1.38$; 46.35 minutes vs. 55.31 minutes) turnaround time was also less for the December 1993 non-urgent population than the November 1993 population. The X-ray turnaround times means are not equal at the alpha equals .05 level. However, there was no statistically significant difference between the laboratory turnaround time means.

The data from the preliminary survey suggests that, unlike the studies done in the civilian sector, the non-urgent ER patient seen at KACH was more likely to be female. Fifty-eight percent of the patients were female and 42 percent were male. With respect to age, the overwhelming majority of non-urgent ER patients were under the age of 40, with an equal likelihood of

being a pediatric patient, aged 0 to 14 (40 percent), or between the ages 15 to 40 (41 percent). The non-urgent user was also most likely to present to the ER during the evening shift, between 1501 to 2300 (52 percent), and was least likely to present to the ER during the night shift, between 2301 to 0700 (almost 15 percent). The remainder (almost 37 percent) presented between 0701 to 1500.

Final Study Survey

As in the November and December 1993 preliminary survey, the sample population (non-urgent group) surveyed in January and February 1994 were more likely to be female than male. Fifty-two percent were female, the other 48 percent male. For the control group (urgent/emergent patient), the patient was more likely to be male than female. Fifty-eight percent were male, while 42 percent were female (Appendix 18).

With regard to age group, the largest percentage of the sample population, 48 percent, was between the age of 15 to 44. The next largest age group was between the age of 0 to 14 (33 percent), followed by the age group between 45 to 64 (15 percent). Only four percent of the sample population were in the age group of over 65 (Appendix 18).

In the control group, the largest percentage, 39 percent, were in the 15 to 44 age group. The next largest percentage, 24 percent, were in the over 65 age group, followed by the 45 to 64 age group (20 percent). The smallest percentage, 17 percent, were in the 0 to 14 age group.

Active duty family members comprised the largest percentage of the sample population (non-urgent group), at 43 percent. The next largest beneficiary category in the sample population was active duty, who represented 29 percent of the sample. The active duty beneficiary category was followed by retired family members, which constituted 15 percent of the sample. Retirees made up 13 percent of the sample population, while less than 1 percent were categorized as "other" (Appendix 18).

At 30 percent, the active duty family members constituted the largest beneficiary category for the control group. Retirees were the next largest beneficiary category, at 28 percent of the control group. Active duty made up the next largest group, at 19 percent. Retired family members made up 14 percent, and the remaining 10 percent of the control group (emergent/urgent patients) were categorized as others.

Non-urgent users were more likely to live off-post and more than six miles from the ER. The largest percentage, 36 percent, live between six to 15 miles off-post, and 24 percent live more than fifteen miles off-post. Twenty-three percent live on-post, while the other 18 percent live less than five miles off-post.

For urgent/emergent patients, the largest percentage, 34 percent, live less than five miles off-post. The next largest percentage, 29 percent, live between 6 to 15 miles off-post. Twenty-seven percent, the next largest group, live on-post, while the smallest percentage, 11 percent, live more than fifteen miles off-post (Appendix 18).

The majority of the sample (non-urgent) population, 55 percent, presented to the ER on a weekday. The other 45 percent presented on a weekend. For the urgent/emergent, the overwhelming majority, 73 percent, presented to the ER on a weekday, while the remaining 27 percent were seen in the ER on a weekend (Appendix 18).

Half of the non-urgent population presented to the ER during the 0701 to 1500 shift. Forty-four percent arrived in the ER during the 1501 to 2300 shift, while almost six percent of the sample group arrived during the 2301 to 0700 shift.

For the control group, 45 percent arrived in the ER during on the 0701 to 1500 shift. The next most frequent shift that the control group arrived on was the 1501 to 2300 shift (29 percent). The remaining 26 percent of the control population arrived in the ER during the 2301 to 0700 shift.

The majority (58 percent) of the sample population, the non-urgent ER users, indicated that the primary reason they chose to come to the ER instead of going to an outpatient clinic was because they felt that their condition was an emergency. Thirty-two percent indicated that the reason they chose to use the ER instead of a clinic was because the ER offers after office hours. The next most frequent reason, indicated by 19 percent, that patients chose the ER instead of a clinic was because the ER was more convenient. The next most frequent reason, indicated by 11 percent of the sample population, was that the patient was referred by a physician. Almost 11 percent stated they used the ER because no appointments were available through Central Appointments. Nine percent indicated that they came to the ER instead of going to a clinic because they have no designated primary care physician. Five percent indicated that they came to the ER because they were unable to reach Central Appointments. Just

over one percent indicated that they chose to use the ER because they perceive the level of care to be better in the ER than in the clinics. The cumulative percentage exceeds 100 percent because the individual was given the option to indicate more than one reason (Appendix 19).

The t-Tests were statistically significant between the sample and control groups in all of the socio-demographic and motivation for ER usage parameters (Appendix 20). The following variables were all statistically significant at the $p < .01$ level: patients age group; patients beneficiary category; the day of week the patient was seen in the ER; and the shift during which the patient arrived in the ER. The variables patient gender ($p = .029$) and distance the patient lives from the ER ($p = .011$) were statistically significant at the $p < .05$ level.

The results of the t-Test indicate that the demographic characteristics of the non-urgent ER users are significantly different than the characteristics of the urgent/emergent ER patient. Specifically, in comparing the two populations, the non-urgent user is: more likely to be female ($t = 2.03$); to be younger - less than 45 years old ($t = -6.53$); be either active duty or an active duty family member ($t = -4.43$); live

off-post and further from the ER ($t = 3.83$); more likely to present to the ER on a weekend ($t = 4.09$); and present during the 0701 to 1500 shift ($t = -3.50$).

A t-Test was also computed to test the differences between the date (weekday/weekend) and shift (shift that the patient arrive in ER) variable group means. Two t-Tests were computed: one that compared the sample (non-urgent) group means ($p = .186$) and the second compared the control (urgent/emergent) group means ($p = .441$) with respect to the date and shift variables. Both t-Tests were not significant at the alpha equals .05 level. The results of the t-Tests indicate that the sample and control group date and shift population means are not significantly different.

CHAPTER 3

DISCUSSION

It is evident from the results of the study that Kimbrough Army Community Hospital (KACH) suffers from an exceedingly high inappropriate utilization rate of its ER. With over 87 percent of the patients that present to the ER categorized as non-urgent, the ER at KACH is primarily acting as an expensive acute care/minor care clinic. This non-urgent utilization rate exceeds the 35 to 75 percent non-urgent utilization rates previously reported (GAO, 1993).

The rate may be higher because the American College of Emergency Physician (ACEP) guidelines were used to determine what is an appropriate visit to the ER. Many of the studies reviewed did not use the ACEP guidelines; instead they relied on a retrospective physician assessment of patients that presented to the ER (Buesching et al, 1985). While this study used the criteria established by the ACEP it supports the high rate of non-urgent utilization of the ER at KACH.

The average amount of time a non-urgent patient waits to be seen by a physician (one hour and 27

minutes) and average total amount of time the patient spends in the ER (two hours and five minutes) is higher than the average waiting time reported in the Air Force study. In the Air Force study the average amount of time it took to be seen by a physician was 25 minutes while the average total amount of time the patient spent in the ER was 71 minutes (Howell et al., 1990). The waiting times reported in this study are consistent with the average waiting times of one to two hours reported in the civilian studies that looked specifically at non-urgent patients (Kerr, 1987; Nordberg, 1990; Pane et al., 1991). The difference could be attributed to the fact that the Air Force study did not separate each category of urgency. Including the emergent and urgent categorized patients with the non-urgent will lower the average waiting times because it is standard protocol for emergent and urgent patients to receive care before non-urgent patients. If emergent and urgent patients were factored in, the average patient waiting times would be less at KACH. Emergent and urgent waiting times were not factored in, since they were not within the scope of this project, and therefore it is not known exactly how much less the average waiting time would be if they were factored in.

One explanation for the statistically significant reduction in the ER waiting times from the November 1993 survey period to the December 1993 survey period could be the changes the hospital made the end of November 1993 to improve access to the outpatient clinics. Specifically, the General Outpatient Clinic (GOC) opened up the clinic to walk-in patients from 0630 to 1500, and Central Appointments began placing patients on a waiting list for the Dermatology, Urology, Orthopaedic, and OB/GYN Clinics. This explanation is further supported when comparing the number of patients seen in the GOC in November and December 1993 with the number seen in November and December 1992. There was a 12.4 percent increase in the number seen in the GOC November 1993 and a 19.2 percent increase in the number seen in December 1993.

In contrast, when comparing the total number of patients seen in the ER at KACH for the same two months, November and December, the number of ER visits decreased by 12 percent. The number of non-urgent patients decreased by 13 percent from November 1992 to December 1992 compared to November 1993 to December 1993 (MEPRS, 1993).

The findings on non-urgent motivation for ER usage suggests that the inability to access primary care

resources is not the main reason patients with non-urgent medical conditions choose to use the ER. The primary reason is that patients incorrectly perceive their medical condition to be an emergency when in fact it is not (58 percent response rate). This finding is consistent with the findings reported in the military hospital study conducted by Richardson that looked at motivation for ER usage. The Richardson study was the only study found in the literature that looked at patients' perceptions of urgency to determine the percentage of inappropriate use of the ER.

This finding indicates that the most important way to decrease non-urgent ER usage is by educating the patient on what constitutes an emergency and what does not. Non-urgent patients in the ER are to some extent a captive audience and a target for health education. And therefore, by making self-care resources available and more appropriate alternate health care resources available, the hospital can decrease the unnecessary costs incurred by providing primary medical care in the ER. The literature suggests that this can and has been done in the form of a self-care medical reference book and an advice nurse/triage nurse. Since it is over 40 percent of the calls to KACH Pediatric Clinic telephone triage system are managed with home care advice only

(the literature indicates that up to 75 percent of ER visits could be treated at home), providing patient education and by making alternate health care resources available could further reduce the percentage of non-urgent ER visits.

The other two main reasons for choosing to use the ER indicated in the study, after work office hours (31.8 percent response rate) and convenience (18.9 percent response rate), were also common reasons for non-urgent ER usage reported in the literature (Richardson, 1991; Padgett and Brodsky, 1992; GAO, 1993). These two reasons can be put under the heading of inability to access care when needed, which was the main reason for non-urgent utilization found in the comprehensive study conducted by the GAO (GAO, 1992). The relatively low percentage of non-urgent patients that indicated the principal reason they used the ER instead of an outpatient clinic was because no appointments were available through Central Appointments (10.8 percent response rate), or that they were unable to reach Central Appointments (5.4 percent response rate) could also be attributed to the recent changes made by the hospital to improve access to outpatient care: Central Appointments placing patients on a waiting list; decentralizing the Pediatric Clinic

appointment system; and opening up the GOC to walk-in patients.

This finding indicates that the ER convenience factor (easy to access and no appointment needed) and weekend and evening hours have a strong appeal to patients with non-urgent medical problems. Many of the non-urgent patients are using the ER as their point of entry into the health care system. Unfortunately, this inappropriate use of the ER for non-urgent medical problems is a financial drain on valuable resources, and is simply not consistent with the capitated-funded budget environment.

While it was not the focus of this study to do a cost benefit analysis, the results suggest that substantial savings could be realized by redirecting patients with non-urgent medical problems to more appropriate and less costly primary care clinics instead of the ER. Briefly, with 21,000 non-urgent visits to the ER annually (87 percent of 24,230 visits for FY 93), at a cost of more than twice a primary care clinic visit ($\$175.33 - \$79.41 = \$95.92$), KACH could save over \$2 million if every non-urgent patient went to a primary care clinic instead of the ER.

When a substantial percentage of non-urgent patients are successfully redirected to other more

appropriate sources of primary care, an in-depth look at ER resources, hours of operation, and even mission could be undertaken. Resources in the form of staff and equipment could be evaluated for redistribution to support the increased primary care clinic workload created by redirecting non-urgent patients from the ER. Resources in the form of money could also be evaluated to determine whether to reduce or eliminate the ER physician contract, and to use the money to hire additional primary care providers.

Since the results revealed that over 95 percent of the non-urgent and 75 percent of the urgent/emergent patients present to the ER between the hours of 0701 to 2300, a study should also be undertaken to explore either reducing staffing or closing the ER from 2301 to 0700. Voluntarily downgrading the ER services at KACH to reduce the high costs created by non-urgent utilization is consistent with the types of measures to reduce inappropriate utilization reported in the literature. Downgrading the ER at KACH to a JCAHO - approved Level 4 ER would also decrease the staffing level.

This pattern of usage, which shows that the weekend is the busiest period is consistent with previous studies. This is also the period when access

to alternate sources of primary care is not available, which suggests that there may be a link between the two factors. Since almost half of the non-urgent patients present to the ER on weekends (45 percent) and almost half present during the 1501 to 2300 shift (44.3 percent), the data suggests that opening up an evening and weekend acute care clinic would provide a more appropriate source of medical care for the non-urgent patients that are inappropriately using the ER.

The results of the t-Test that compared the demographic differences between the sample and control group population means, indicates that there is a statistically significant difference between the demographics of the two groups. This reinforces the statement that the non-urgent patient is significantly different than the urgent and emergent patient that presents to the KACH ER. This allows the researcher to make recommendations to decrease non-urgent utilization of the ER based on the demographic findings from the sample group studied. Other demographic findings from the sample group: the majority of non-urgent patients are female (52 percent); almost half are active duty family members (43 percent); and that over 80 percent are under the age of 45, suggests that when deciding to

set up evening and weekend primary care clinics strong consideration should be given to OB/GYN and Pediatrics Clinics.

Additionally, redirecting non-urgent patients from the ER to other primary care clinics would allow the ER to return to doing what it was established to do: evaluate, stabilize, and treat injuries and illnesses that require immediate attention (Norberg, 1990). This would most likely reduce the waiting times and "bottlenecks" that currently exist in the ER.

The finding that over 75 percent of the non-urgent ER users live within 15 miles of KACH, is very consistent with what previous studies have reported. This finding simply reinforces the convenience factor; the more convenient the greater the use.

Redirecting non-urgent patients to alternate more appropriate sources of care will allow the hospital to increase its efficiency while improving access. In a managed care environment, ensuring that the care is provided in the most cost-effective and efficient setting is critical to the survival of the organization.

CHAPTER 5

RECOMMENDATIONS AND CONCLUSION

It is evident from the results of the study that Kimbrough Army Community Hospital (KACH) experiences a high inappropriate utilization rate of it's ER. Rendering primary care in an ER setting is costly and is not consistent with the capitation funding or the philosophy of providing cost effective health care that maximizes productivity. In order for KACH to be competitive in a managed care environment, it must take steps to reduce inappropriate utilization of the ER and improve access to care at the appropriate level of care necessary.

Based on the results of my study, it is proposed that three steps or actions that KACH should be taken in order to provide the most cost effective, quality care. These actions will lead to the development of a primary care system model that focuses on access to care at the appropriate level of care. The model is based on triage, self-care education, and availability of primary care clinics. The expected benefit to the

implementation of this model is a decrease in inappropriate utilization and lower system costs.

The first component, triage, involves the implementation of a fast-track triage system in the ER and the expansion of a telephone triage and management system similar to the one currently in operation at the Pediatric Clinic. Recommend that the ER set up a triage system with the adjacent General Outpatient Clinic (GOC). When a patient presents to the ER, he or she is immediately triaged by a registered nurse and those categorized as non-urgent are redirected to the GOC where they will be treated more appropriately. Redirecting non-urgent patients from the ER will decrease inappropriate ER volume and will allow the ER to treat urgent and emergent conditions. The results of the study, which identified that over 87 percent of ER visits are non-urgent, indicates that a percentage of this patient flow could be redirected from the ER to the GOC and other primary care clinics.

In order to staff the additional workload in the GOC some of the ER resources from the ER should be redistributed to the GOC. The amount of resources would depend on the effectiveness of the triage system and the hours of operation of the GOC. These resources would include physicians, nurses, paraprofessionals as

well as equipment and space. Because the ER and GOC are co-located this should be accomplished with minimal logistical costs. Redirecting non-urgent ER patients to the GOC has the potential to significantly reduce the number of Full Time Equivalent (FTE) ER physicians. Because it is more costly to staff an ER than it is an acute care/minor care clinic money could be saved as well.

To minimize start-up costs, a telephone triage system should be set up in the GOC along the lines of the one currently operating in the Pediatric Clinic (Appendix 21). However, based on the literature it is recommended that the telephone triage number be staffed with a trained paraprofessional, using standardized protocols, such as the physician-developed triage algorithm by Informed Access Systems for FirstHelp (FirstHelp, 1993). Research has demonstrated that a trained paraprofessional can effectively triage patients with the use of a standardized protocol. Productivity and efficiency will also improve because the on-call physician will not have to "drop everything" to make a telephone call to a parent. The on-call physician will have more control over time and will be able to see walk-in patients and scheduled appointments without interruption.

Because 94 percent of the non-urgent patients in the study presented to the ER between the hours of 0701 to 2300, the telephone triage lines should be staffed during those hours. Additionally, because 45 percent of the non-urgent patients present to the ER on the weekend, staffing the telephone triage lines from 0800 to 1600 on Saturday should also be explored. The telephone triage line should have a four to six line stacking capability and a recorded message should be utilized that informs the waiting caller of the hours of operation, the purpose of the telephone triage, and other patient education information. A successful component to a telephone triage system is one that allows the telephone triage person to have access to the particular clinic's patient appointments schedule. The Pediatric Clinic has recently decentralized appointments and I would recommend that the GOC do the same. This would allow the triage person to be able to schedule same day or 24-hour appointments for those patients who require prompt appointments. Another important component to the triage system is the availability of a designated on-call physician. The telephone triage person must have direct access to the on-call physician for questions and consultation. In

the long run, contracting with a company that provides 24-hour telephonic advice should be explored.

Along with the establishment of an ER triage and fast track system and a telephone triage system, the hours of operation of the Pediatric Clinic and the GOC should be expanded. On the basis of the findings, these primary care clinics should expand their hours of operation to 0730 to 2200, Monday through Friday, and 0800 to 1600, Saturday. The greater the availability of the more cost effective primary care clinics, the less the inappropriate utilization of the more expensive ER. This redirecting of non-urgent ER patients to the primary care clinics should not have a significant impact on primary care clinic volume because the telephone triage system should reduce primary care clinic volume. This is because a large percentage of those will be treated with home care advice only. The decreased utilization of the ER, therefore, means that staffing could be redirected or reallocated from the ER to the primary care clinics if needed.

A third component to the primary care system model is education. Education is a continuous process, and not a one person one-time function. Education, in the

form of orienting the user to the health care system, and in providing education on basic self-care techniques and resources, is also key to reducing the number of ER and primary care visits. Educating eligible beneficiaries on the KACH and military health care system (i.e., how to schedule an appointment and clinic hours of operation) is the role of every provider and administrator in the organization. However, it is of particular importance that the triage nurse and the telephone triage person educate the patient on how, when and where to access the health care at KACH. Brochures listing what is a life threatening condition and what is a non-life threatening condition, as well as telephone triage numbers and primary care clinic hours of operations should be provided to the non-urgent patient by the ER triage nurse.

Published research studies have demonstrated the effectiveness that self-care manuals have on reducing non-urgent and inappropriate hospital visits. KACH should purchase health and self-care manuals, invite beneficiaries in the KACH catchment area to an orientation on how to use the manual, and following the orientation provide each participant with a free copy of the manual. Initially, invitations to attend the

free Health Care Orientation Forum should be sent to the non-urgent ER users over the past several months (names and addresses can be obtained from the Standard Form 558). However, over time the Health Care Orientation Forum should be made available to all eligible beneficiaries. Based on previous studies, the use of self-care manuals alone could reduce the number of primary care and ER visits by at least 15 percent (U.S. Air Force, 1993).

The final element to the successful development and use of this primary care system model is marketing. These services must initially be marketed to the internal customers, the staff, whose participation is essential. After marketing to the internal customers, marketing efforts should be directed at the targeted population, the non-urgent ER user. The results of the study provide necessary non-urgent user demographic data that should be used to develop a marketing strategy to market the target population.

In conclusion, in order to alleviate the inappropriate utilization of the ER at KACH, patients must be given access to appropriate alternative sources of care. Access to care must be improved if KACH is to remain competitive in a managed care environment. Under TriCare, the Army managed care initiative,

beneficiaries will be asked to enroll in one of several health plans. Beneficiaries will likely choose the plan that they perceive will provide them with accessible, quality, and affordable health care.

The results of this study indicate that many beneficiaries access primary care through the ER. This is both inefficient and costly to the hospital, as well as ineffective from the patient's perspective.

The primary care system model proposed will decrease inappropriate utilization of the ER and increase access to care which will result in a win-win situation for both patients and the hospital. The patients will "win" because access to care will improve, and the hospital will "win" because efficiency and productivity will be improved.

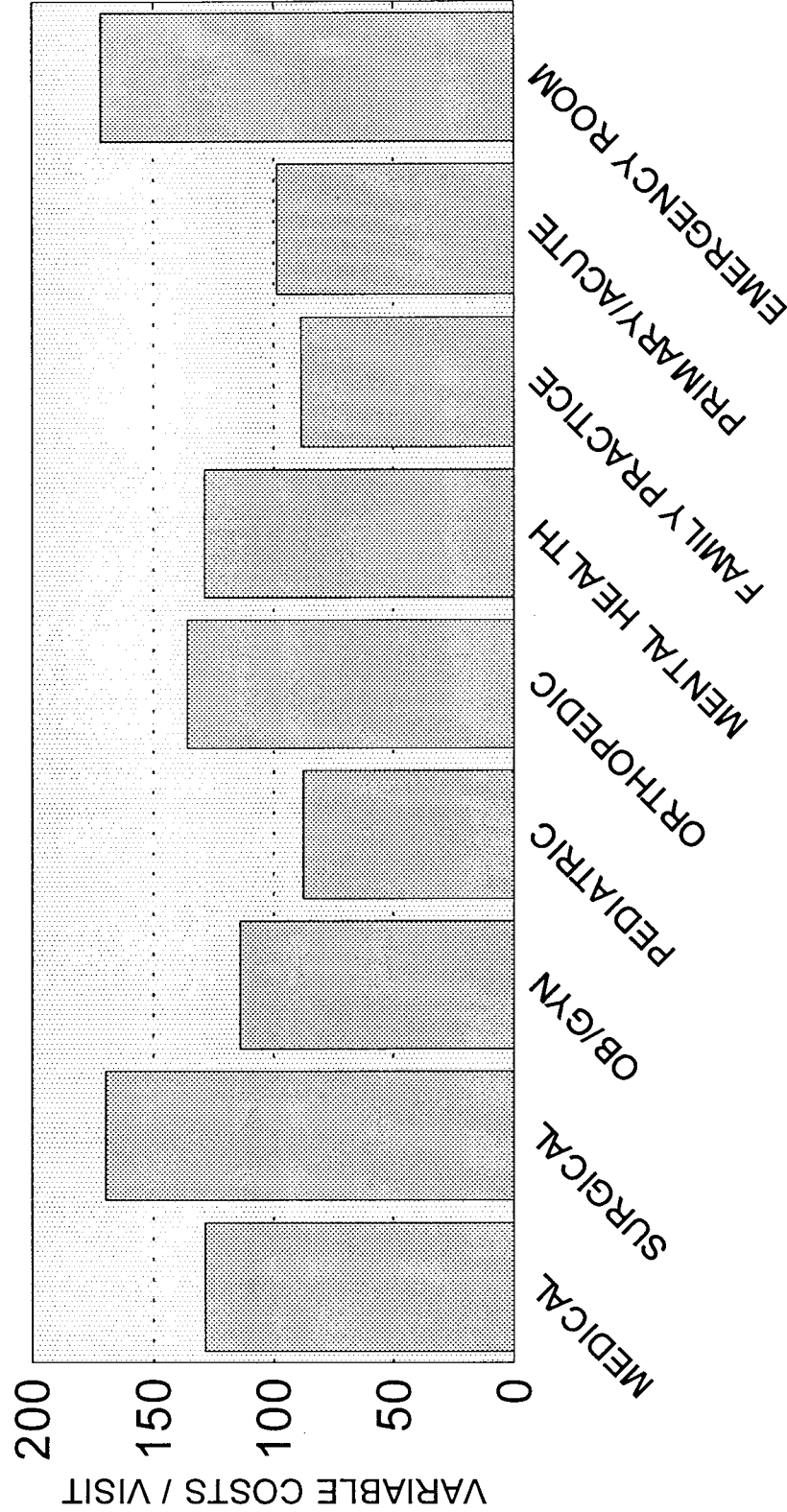
Appendix 1

Variable Cost/Visit at 50 - 99 Bed Naval Hospitals

VARIABLE COST PER VISIT AT NAVY HOSPITALS

WITH 50 - 99 BEDS AND A LEVEL 2 E.R.

TOTAL FY 92



Dollars	128.57	169.57	114.07	87.62	136.03	128.89	88.48	98.68	171.65
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AMBULATORY CARE CLINICS

Source: NMIMC

Appendix 2

Kimbrough Army Community Hospital Emergency Room Staffing

TIME	PHYSICIAN	RN*	LPN*	PARAPROF*
WEEKDAY:				
0701-1500	1	2	1	3
1501-2300	2	2	1	2
2301-0700	1	1	1	2
PHYSICIAN/WEEKEND:				
1101-2300	2			
2301-1100	1			
NURSING STAFF/WEEKEND:				
0701-1500		2	1	2
1501-2300		2	1	3
2301-0700		1	1	2

* RN= Registered Nurse

LPN= Licensed Practical Nurse

Paraprof= Nursing Paraprofessional (i.e., Medical Specialist and Nursing Assistant)

Appendix 3

Standard Form 558
(Emergency Care and Treatment Medical Record)

EMERGENCY CARE AND TREATMENT (Medical Record)				TREATMENT FACILITY (Stamp)				LOG NUMBER									
ARRIVAL				TRANSPORTATION TO HOSPITAL (Attach care enroute sheet)				CURRENT MEDS. (tetanus immunization and other data)				HISTORY OBTAINED FROM <input type="checkbox"/> PATIENT <input type="checkbox"/> OTHER (Specify)					
DATE DAY MONTH YR.				TIME				<input type="checkbox"/> PRIVATE VEHICLE <input type="checkbox"/> AMBULANCE <input type="checkbox"/> OTHER (Specify)				ALLERGIES					
PATIENT'S HOME ADDRESS OR DUTY STATION (City, State and ZIP Code)										HOME TELE. NO. (Inc. area code)							
CHIEF COMPLAINT(S) (Include symptom(s), duration)										SEX		AGE		POSSIBLE THIRD PARTY PAYER? <input type="checkbox"/> YES <input type="checkbox"/> NO			
VITAL SIGNS				DESCRIBE (1) Subjective data (Pertinent History); (2) Objective data (Examination - include results of tests and x-rays); (3) Assessment (Diagnosis); (4) Plan (Treatment/Procedures - include medication given and follow-up)										TIME SEEN BY PROVIDER			
TIME																	
BP																	
PULSE																	
RESP.																	
TEMP.																	
WT. (Child)																	
CATEGORY (See reverse)																	
EMERGENT																	
URGENT																	
NON-URGENT																	
ORDERS		INITS.		TIME													
ASSESSMENT/DIAGNOSIS																	
DISPOSITION (Check all that apply)																	
HOME				FULL DUTY													
QUARTERS																	
24 Hrs.				48 Hrs.				72 Hrs.									
MODIFIED DUTY UNTIL:																	
DAY				MONTH				YEAR									
REFERRED TO (Indicate clinic)																	
EMERGENCY				TODAY													
72 HOURS				ROUTINE													
ADMIT. TO HOSP. UNIT/SERVICE																	
CONDITION UPON RELEASE																	
IMPROVED				UNCHANGED													
DETERIORATED																	
TIME OF RELEASE:																	

(CONTINUE ON SF 507, IF NEEDED)

PATIENT'S IDENTIFICATION (Mechanical imprint)
FOR WRITTEN ENTRIES GIVE: Name - last, first, middle;
SSN; DOB, service status, name and relation of sponsor or next
of kin. (IMPORTANT: LIST FACILITY HOLDING TREAT-
MENT RECORD).

SIGNATURE OF PROVIDER AND ID STAMP

INSTRUCTIONS TO PATIENT (Include medications ordered, any limitations and follow-up plans)

Appendix 4

Standard Form 513 (Consultation Referral Sheet)

MEDICAL RECORD

CONSULTATION SHEET

REQUEST

TO:

FROM: (Requesting physician or activity)

DATE OF REQUEST

REASON FOR REQUEST (Complaints and findings)

PROVISIONAL DIAGNOSIS

DOCTOR'S SIGNATURE

APPROVED

PLACE OF CONSULTATION

☐ ROUTINE ☐ TODAY

☐ BEDSIDE ☐ ON CALL

☐ 72 HOURS ☐ EMERGENCY

CONSULTATION REPORT

(Continued on reverse side)

SIGNATURE AND TITLE

DATE

IDENTIFICATION NO.

ORGANIZATION

REGISTER NO.

WARD NO.

PATIENT'S IDENTIFICATION (For typed or written entries give: Name-last, first, middle; grade; rank; rate; hospital or medical facility)

CONSULTATION SHEET
STANDARD FORM 513 (Rev. 9-77)
Prescribed by GSA/ICMR
FPMR 101-11.806-8
513-107

Appendix 5

American College of Emergency Physicians Definition of an Emergency

BONA FIDE EMERGENCY DEFINED*

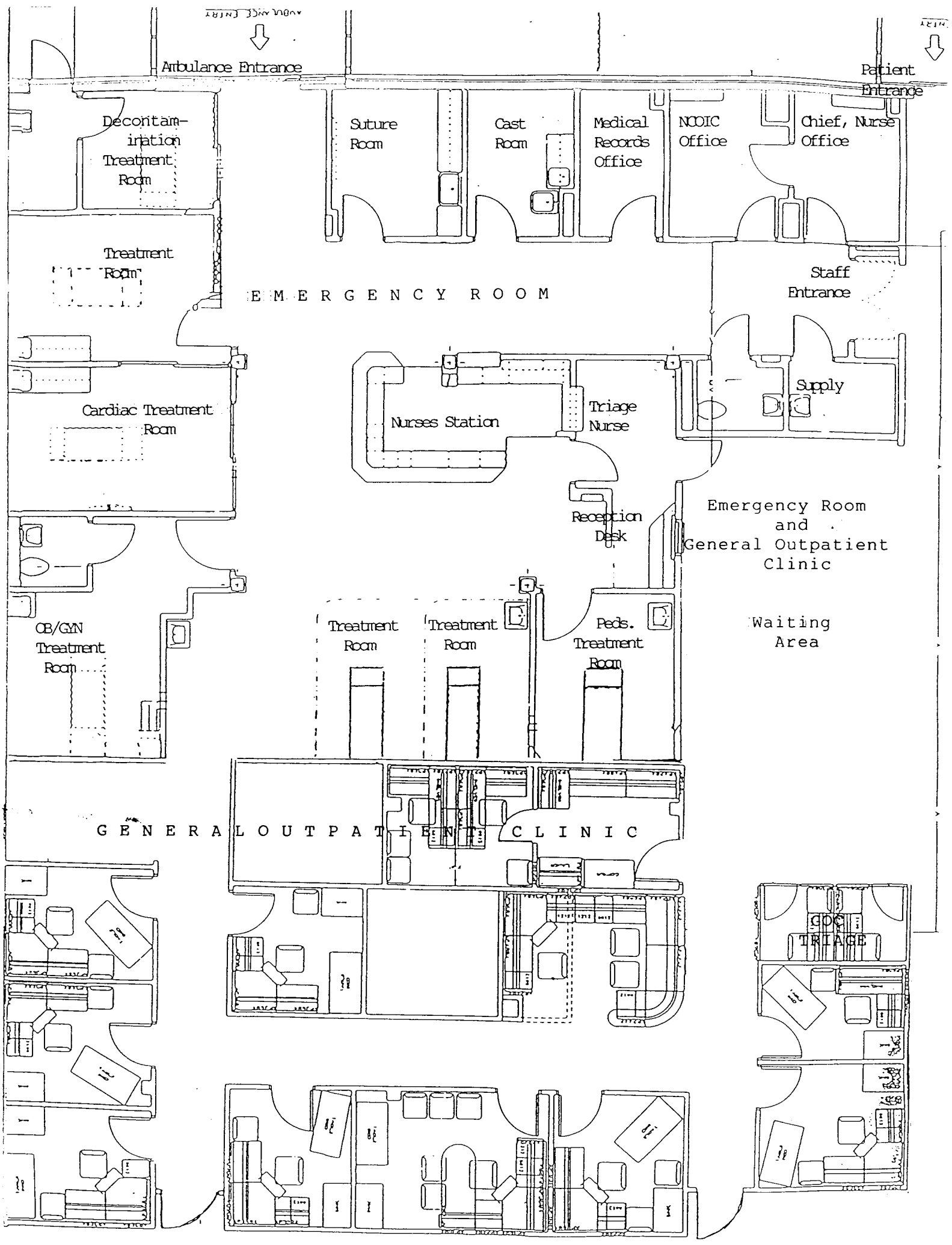
We feel that a patient has made an appropriate visit to an emergency department when: An unforeseen condition of a pathophysiological or psychological nature develops which a prudent layperson, possessing an average knowledge of health and medicine, would judge to require urgent and unscheduled medical attention most likely available, after consideration of possible alternatives, in a hospital emergency department. This would include:

1. Any condition resulting in admission of the patient to a hospital or nursing home within 24 hours
2. Evaluation or repair of acute (less than 72 hours) trauma
3. Relief of acute or severe pain
4. Investigation or relief of acute infection
5. Protection of public health
6. Obstetrical crises and/or labor
7. Hemorrhage or threat of hemorrhage
8. Shock or impending shock
9. Investigation and management of suspected abuse or neglect of person which, if not interrupted, could result in temporary or permanent physical or psychological harm
10. Congenital defects or abnormalities in a newborn infant, best managed by prompt intervention
11. Decompensation or threat of decompensation of vital functions such as sensorium, respiration, circulation, excretion, mobility or sensory organs
12. Management of a patient suspected to be suffering from a mental illness and posing an apparent danger to the safety of himself, herself or others
13. Any sudden and/or serious symptom(s) which might indicate a condition which constitutes a threat to the patient's physical or psychological well-being requiring immediate medical attention to prevent possible deterioration, disability or death.

*Adopted by the Board of Directors of the American College of Emergency Physicians on October 23, 1982.

Appendix 6

Physical Layout of the Kimbrough Army Community Hospital Emergency Room



Appendix 7

Standard Form 600 (Chronological Record of Medical Care) MEDDAC
Overprint 263 (Pediatric Telephone Triage)

Appendix 8

Department of the Army Form 3889 (Nursing Unit 24 Hour Report)

NURSING UNIT 24 HOUR REPORT				WARD/UNIT	CAPACITY	CENSUS AT 0700 HRS	DATE
For use of this form, see AR 40-407; the proponent agency is the Office of The Surgeon General.							
ADM DATA	DAY	EVENING	NIGHT	OTHER NOTATIONS			
CENSUS				DAY	EVENING	NIGHT	
ADMISSIONS							
TRANSFER IN							
TRANSFER OUT							
DISPOSITIONS							
VACANT BEDS							
NURSE'S SIGNATURE							
<i>Check one</i> <input type="checkbox"/> SI <input type="checkbox"/> VSI <input type="checkbox"/> NEW ADM				HOSPITAL DAY POST-OP DAY DIAGNOSIS/SURGICAL PROCEDURE			
PATIENT'S IDENTIFICATION				DAY	EVENING	NIGHT	
<i>Check one</i> <input type="checkbox"/> SI <input type="checkbox"/> VSI <input type="checkbox"/> NEW ADM				HOSPITAL DAY POST-OP DAY DIAGNOSIS/SURGICAL PROCEDURE			
PATIENT'S IDENTIFICATION				DAY	EVENING	NIGHT	
<i>Check one</i> <input type="checkbox"/> SI <input type="checkbox"/> VSI <input type="checkbox"/> NEW ADM				HOSPITAL DAY POST-OP DAY DIAGNOSIS/SURGICAL PROCEDURE			
PATIENT'S IDENTIFICATION				DAY	EVENING	NIGHT	

Appendix 9

Preliminary Survey Instrument

EMERGENCY ROOM SURVEY

In our ongoing effort to provide the best service to our beneficiaries, we are looking at the amount of time that a patient spends in the Emergency Room (ER). Specifically, we are interested from the patient's arrival in the ER to the time the patient is released from the ER.

To help us better serve you, please complete the following questions:

1). Last Four of the Patient's Sponsor's Social Security Number: _____

2). Time Patient Arrived in the ER: _____

3). Patient's Age Group: 0 - 14 _____
 15 - 40 _____
 41 - 64 _____
 > 65 _____

4). Patient's Gender: Male _____ Female _____

Please give the completed form to the Triage Nurse. Thank you for your cooperation.

DISCLOSURE STATEMENT: The information you provide on this form is confidential and privileged IAW 10 U.S.C. 1102.

DO NOT WRITE BELOW THIS LINE. TO BE COMPLETED BY THE ER STAFF.

Triage Date: _____
Triage Time: _____
Log-in Time: _____
Physician Time: _____
X-Ray Time-out: _____
X-Ray Time-in: _____
Lab Time-out: _____
Lab Time-in: _____
Release Time: _____

Appendix 10

Final Study Survey Instrument

EMERGENCY ROOM SURVEY

In our ongoing effort to better serve you, we are conducting a survey of Emergency Room (ER) usage. Please take a few minutes to answer the following questions. Thank you for your time.

1. Today's Date: _____
2. Time of day the patient arrived in the ER: ☐ 0701 - 1500
☐ 1501 - 2300
☐ 2301 - 0700
3. Last four of the patient's sponsor's social security number: _____
4. Patient's gender: ☐ Male ☐ Female
5. Patient's age group: ☐ 0 - 14
☐ 15 - 44
☐ 45 - 64
☐ > 65
6. Patient's beneficiary category: ☐ Active Duty
☐ Active Duty Family Member
☐ Retired
☐ Retired Family Member
☐ Other
7. Distance patient lives from the ER: ☐ On-post housing
☐ Off-post:
☐ 0 - 5 Miles
☐ 6 - 15 Miles
☐ > 15 Miles
8. Indicate the primary reason that the patient decided to come to the ER today instead of going to a clinic (If more than one reason applies prioritize the reasons: 1 being the most important reason, followed by 2, 3, etc.):

☐ It is more convenient (easier or quicker)
☐ It offers after office hours (evening/weekend)
☐ Unable to get through to Central Appointments
☐ No appointments available through Central Appointments
☐ The level of care is better than in the clinics
☐ Do not have a designated primary care physician
☐ Felt that the patients condition was an emergency
☐ Was referred to the ER by a physician
9. Please use the reverse side of this survey to make any comments or suggestions pertaining to the ER.

Please place the completed survey in the box located outside the ER reception window.

Appendix 11

Kimbrough Army Community Hospital Weekday/Weekend Staffing Shifts

DAY	SHIFT
WEEKDAY	0701 - 1500
	1501 - 2300
	2301 - 0700
WEEKEND	0701 - 1500
	1501 - 2300
	2301 - 0700

Appendix 12

Preliminary Survey Frequency and Descriptive Data*

VARIABLE NAME

PATIENT'S GENDER:

Value Label	Value	Frequency	Percent
MALE	1	113	42.0
FEMALE	2	156	58.0
Total		269	100.0

PATIENT'S AGE GROUP:

Value Label	Value	Frequency	Percent
0 - 14	1	108	40.1
15 - 40	2	110	40.9
41 - 64	3	45	16.7
> 65	4	6	2.2
Total		269	100.0

Mean	1.810	Std Dev	.790	Variance	.624
------	-------	---------	------	----------	------

ARRIVAL TIME IN ER:

Value Label	Value	Frequency	Percent
0701 - 1500	1	91	33.8
1501 - 2300	2	139	51.7
2301 - 0700	3	39	14.5
Total		269	100.0

Mean	1.807	Std Dev	.669	Variance	.448
------	-------	---------	------	----------	------

LOG-IN TIME (patient arrival time to patient log-in time):

Mean	25.602	Median	16.000	Mode	1.000
Std dev	28.491	Variance	811.726	Kurtosis	24.409
Skewness	3.520	Range	281.000	Minimum	1.000
Maximum	282.000				

Valid cases	269	Missing Cases	0
-------------	-----	---------------	---

* All Times are in Minutes

TRIAGE TIME (patient arrival time to patient triage time):

Mean	24.487	Median	15.000	Mode	1.000
Std dev	36.281	Variance	1316.281	Kurtosis	52.869
Skewness	5.948	Range	404.000	Minimum	.000
Maximum	404.000				

Valid cases	269	Missing Cases	0
-------------	-----	---------------	---

PHYSICIAN TIME (patient arrival time to time seen by physician):

Mean	86.777	Median	75.000	Mode	60.000
Std dev	61.287	Variance	3756.040	Kurtosis	2.911
Skewness	1.442	Range	355.000	Minimum	0.000
Maximum	355.000				

Valid cases	269	Missing Cases	0
-------------	-----	---------------	---

TOTAL TIME SPENT IN THE ER (arrival time to time released from ER):

Mean	125.431	Median	107.000	Mode	90.000
Std dev	72.421	Variance	5244.828	Kurtosis	3.946
Skewness	1.605	Range	499.000	Minimum	15.000
Maximum	514.000				

Valid cases	269	Missing Cases	0
-------------	-----	---------------	---

LAB WORK TIME (Lab time-out to Lab time-in):

Mean	59.914	Median	55.000	Mode	60.000
Std dev	32.071	Variance	1028.351	Kurtosis	1.084
Skewness	1.054	Range	135.000	Minimum	10.000
Maximum	145.000				

Valid cases	35	Missing Cases	0
-------------	----	---------------	---

X-RAY TIME (X-Ray time-out to X-Ray time-in):

Mean	53.074	Median	50.000	Mode	60.000
Std dev	28.045	Variance	786.547	Kurtosis	.037
Skewness	.587	Range	130.000	Minimum	5.000
Maximum	135.000				

Valid Cases	68	Missing Cases	0
-------------	----	---------------	---

* All Times are in Minutes

Appendix 13

Final Study Survey Non-Urgent Group Open-Ended Responses to the Statement "Please Use the Reverse Side of this Survey to Make Any Comments or Suggestions Pertaining to the ER"

General Comments

- Came to ER because the clinics were closed.
- I came to the ER because I'm seen in the ER all the time.
- I use the ER for routine exams.
- Came to ER because I have no transportation in the daytime.
- No pediatric appointments were available.
- I had no choice but to use the ER because the clinic at NSA (the National Security Agency) only sees military personnel between 0700 - 0900.
- Came to the ER because I wanted to get on medications as quickly as possible.
- Kimbrough should open an evening clinic.

Negative Comments About the ER

- The ER needs to be more organized in the way they see patients and in how long it takes to be seen.
- I'm upset because I waited one hour and five minutes with my child in the ER before I was told to go to the Pediatric Clinic. When I got to the Pediatric Clinic we waited again because it was on a first come first serve basis.
- It took over an hour to have my vital signs taken.
- There are not enough doctors, too many holdups, and rude staff.
- I waited 4 hours to be seen!!
- The service is slow! I waited over 2 1/2 hours.
- Poor service! Arrived at 1930 and not seen until after 2330.
- I have never seen the likes of such incompetent care ever!
- Waited over two hours and was never updated on why I waited so long.
- If you make people wait this long you need to update them at least every 30 minutes.
- Very long wait!!! Over 2 hours. Procedures need to be improved!!
- As an Active Duty member I felt the service was inadequate and the attitude of the staff was unnecessarily rude and unprofessional.
- Absolutely unacceptable service! Arrived at 0920 and not been seen at 1300.
- It is getting quite old having to wait 3 or 4 hours to have a doctor look in my child's ears and hand out antibiotics.
- The care here is ridiculous. It is apparent you need more doctors.

Positive Comments About the ER

- Over the past year the service in the ER has become a better service oriented facility, geared more towards the care of patients.
- The ER staff was helpful this morning. In previous visits the staff were rude, but this time they were compassionate, polite, etc..
- Good service.
- Keep up the good work!
- The ER staff was extraordinary. They tended to my daughter with swiftness, tenderness, and true concern. Great job!

Appendix 14

Defense Medical Information Systems (DMIS) Zip Codes

MILES



0 5 10

21133

21207

2110421163

21229

21723

21794

21042

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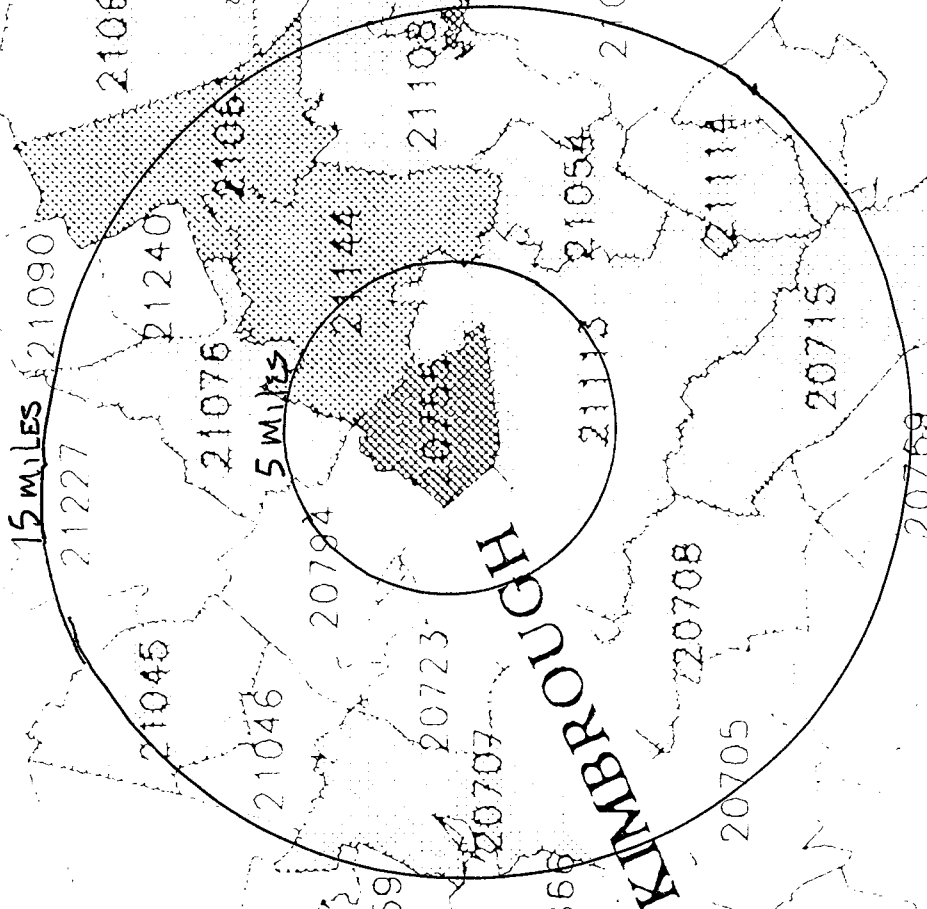
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Appendix 15

Final Study Survey Sample Frequency and Descriptive Data

Non-Urgent (Sample) Group Data

GENDER Patient's Gender					
Value Label		Value	Frequency	Percent	
Male		1	141	47.6	
Female		2	155	52.4	
			-----	-----	
		Total	296	100.0	
Mean	1.524	Median	2.000	Mode	2.000
Std dev	.500	Variance	.250		
Valid cases	296	Missing cases	0		
AGE Patient's Age Group					
Value Label		Value	Frequency	Percent	
0 - 14		1	98	33.1	
15 - 44		2	142	48.0	
45 - 64		3	45	15.2	
> 65		4	11	3.7	
			-----	-----	
		Total	296	100.0	
Mean	1.895	Median	2.000	Mode	2.000
Std dev	.789	Variance	.623		
Valid cases	296	Missing cases	0		
BENCAT Patient's Beneficiary Category					
Value Label		Value	Frequency	Percent	
Active Duty		1	85	28.7	
Active Duty Family Member		2	128	43.2	
Retired		3	37	12.5	
Retired Family Member		4	45	15.2	
Other		5	1	.3	
			-----	-----	
		Total	296	100.0	
Mean	2.152	Median	2.000	Mode	2.000
Std dev	1.015	Variance	1.031		
Valid cases	296	Missing cases	0		

Non-Urgent (Sample) Group Data

LIVE Distance Patient Lives From ER

Value Label	Value	Frequency	Percent		
On-Post	1	67	22.6		
Off-Post: 0-5 miles	2	52	17.6		
Off-Post: 6-15 miles	3	105	35.5		
Off-Post: > 15 miles	4	72	24.3		
		-----	-----		
	Total	296	100.0		
Mean	2.615	Median	3.000	Mode	3.000
Std dev	1.086	Variance	1.180		
Valid cases	296	Missing cases	0		

DATE Day of Week Patient Was Seen In ER

Value Label	Value	Frequency	Percent		
Weekday	1	162	54.7		
Weekend	2	134	45.3		
		-----	-----		
	Total	296	100.0		
Mean	1.453	Median	1.000	Mode	1.000
Std dev	.499	Variance	.249		
Valid cases	296	Missing cases	0		

SHIFT Shift That Patient Arrived in ER

Value Label	Value	Frequency	Percent		
0701 - 1500	1	149	50.3		
1501 - 2300	2	131	44.3		
2301 - 0700	3	16	5.4		
		-----	-----		
	Total	296	100.0		
Mean	1.551	Median	1.000	Mode	1.000
Std dev	.597	Variance	.357		
Valid cases	296	Missing cases	0		

Non-Urgent (Sample) Group Data

EASE It Is More Convenient

Value Label	Value	Frequency	Percent		
Yes, Primary Reason	1	56	18.9		
No, Not a Primary Reason	2	240	81.1		
		-----	-----		
	Total	296	100.0		
Mean	1.811	Median	2.000	Mode	2.000
Std dev	.392	Variance	.154		
Valid cases	296	Missing cases	0		

HOURS It Offers After Office Hours

Value Label	Value	Frequency	Percent		
Yes, Primary Reason	1	94	31.8		
No, Not a Primary Reason	2	202	68.2		
		-----	-----		
	Total	296	100.0		
Mean	1.682	Median	2.000	Mode	2.000
Std dev	.466	Variance	.217		
Valid cases	296	Missing cases	0		

CAS Unable To Get Through To Central Appts.

Value Label	Value	Frequency	Percent		
Yes, Primary Reason	1	16	5.4		
No, Not a Primary Reason	2	280	94.6		
		-----	-----		
	Total	296	100.0		
Mean	1.946	Median	2.000	Mode	2.000
Std dev	.227	Variance	.051		
Valid cases	296	Missing cases	0		

Non-Urgent (Sample) Group Data

APPT						No Appts. Available Through Central Appt					
Value Label			Value		Frequency	Percent					
Yes, Primary Reason			1		32	10.8					
No, Not a Primary Reason			2		264	89.2					
					-----	-----					
Total					296	100.0					
Mean		1.892	Median		2.000	Mode		2.000			
Std dev		.311	Variance		.097						
Valid cases		296	Missing cases		0						

CARE												The Level of Care Better Than in Clinics											
Value Label			Value		Frequency	Percent																	
Yes, Primary Reason			1		4	1.4																	
No, Not a Primary Reason			2		292	98.6																	
					-----	-----																	
Total					296	100.0																	
Mean		1.986	Median		2.000	Mode		2.000															
Std dev		.116	Variance		.013																		
Valid cases		296	Missing cases		0																		
NO_DR												Do Not Have A Designated Primary Care Dr.											
Value Label			Value		Frequency	Percent																	
Yes, Primary Reason			1		26	8.8																	
No, Not a Primary Reason			2		270	91.2																	
					-----	-----																	
Total					296	100.0																	
Mean		1.912	Median		2.000	Mode		2.000															
Std dev		.284	Variance		.080																		
Valid cases		296	Missing cases		0																		

Non-Urgent (Sample) Group Data

FELT_ER Felt Condition Was An Emergency

Value Label	Value	Frequency	Percent		
Yes, Primary Reason	1	171	57.8		
No, Not a Primary Reason	2	125	42.2		
		-----	-----		
	Total	296	100.0		
Mean	1.422	Median	1.000	Mode	1.000
Std dev	.495	Variance	.245		
Valid cases	296	Missing cases	0		

REFERRED Was Referred To ER By A Physician

Value Label	Value	Frequency	Percent		
Yes, Primary Reason	1	33	11.1		
No, Not a Primary Reason	2	263	88.9		
		-----	-----		
	Total	296	100.0		
Mean	1.889	Median	2.000	Mode	2.000
Std dev	.315	Variance	.099		
Valid cases	296	Missing cases	0		

Urgent/Emergent (Control) Group Data

GENDER Patient's Gender

Value Label	Value	Frequency	Percent
Male	1	91	57.6
Female	2	67	42.4
		-----	-----
	Total	158	100.0
Mean	1.424	Median	1.000
Std dev	.496	Variance	.246
Mode			1.000
Valid cases	158	Missing cases	0

AGE Patient's Age Group

Value Label	Value	Frequency	Percent
0 - 14	1	27	17.1
15 - 44	2	61	38.6
45 - 64	3	32	20.3
> 65	4	38	24.1
		-----	-----
	Total	158	100.0
Mean	2.513	Median	2.000
Std dev	1.039	Variance	1.079
Mode			2.000
Valid cases	158	Missing cases	0

BENCAT Patient's Beneficiary Category

Value Label	Value	Frequency	Percent
Active Duty	1	30	19.0
Active Duty Family Member	2	47	29.7
Retired	3	44	27.8
Retired Family Member	4	22	13.9
Other	5	15	9.5
		-----	-----
	Total	158	100.0
Mean	2.652	Median	3.000
Std dev	1.210	Variance	1.464
Mode			2.000
Valid cases	158	Missing cases	0

Urgent/Emergent (Control) Group Data

LIVE Distance Patient Lives From ER					
Value Label		Value	Frequency	Percent	
On-Post		1	42	26.6	
Off-Post: 0-5 miles		2	54	34.2	
Off-Post: 6-15 miles		3	45	28.5	
Off-Post: > 15 miles		4	17	10.8	
			-----	-----	
Total			158	100.0	
Mean	2.234	Median	2.000	Mode	2.000
Std dev	.965	Variance	.932		
Valid cases	158	Missing cases	0		
DATE Day Of Week Patient Was Seen In ER					
Value Label		Value	Frequency	Percent	
Weekday		1	116	73.4	
Weekend		2	42	26.6	
			-----	-----	
Total			158	100.0	
Mean	1.266	Median	1.000	Mode	1.000
Std dev	.443	Variance	.196		
Valid cases	158	Missing cases	0		
SHIFT Shift That Patient Arrived in ER					
Value Label		Value	Frequency	Percent	
0701 - 1500		1	71	44.9	
1501 - 2300		2	46	29.1	
2301 - 0700		3	41	25.9	
			-----	-----	
Total			158	100.0	
Mean	1.810	Median	2.000	Mode	1.000
Std dev	.823	Variance	.677		
Valid cases	158	Missing cases	0		

Appendix 16

Breakdown of Preliminary Survey Data Used for Each Two Week Period Surveyed

VARIABLE NAME

LOG-IN TIME (patient arrival time to patient log-in time):

1st Two Week Period (1-14 Nov 93):

Mean	29.676	Median	19.000	Mode	1.000
Std dev	34.129	Variance	1164.778		

Valid cases	148	Missing Cases	0
-------------	-----	---------------	---

2nd Two Week Period (7-20 Dec 93):

Mean	20.620	Median	15.000	Mode	10.000
Std dev	18.453	Variance	340.504		

Valid cases	121	Missing Cases	0
-------------	-----	---------------	---

TRIAGE TIME (patient arrival time to patient triage time):

1st Two Week Period (1-14 Nov 93):

Mean	30.986	Median	16.500	Mode	1.000
Std dev	45.567	Variance	2076.367		

Valid cases	148	Missing Cases	0
-------------	-----	---------------	---

2nd Two Week Period (7-20 Dec 93):

Mean	16.537	Median	11.000	Mode	10.000
Std dev	16.743	Variance	280.317		

Valid cases	121	Missing Cases	0
-------------	-----	---------------	---

PHYSICIAN TIME (patient arrival time to time seen by physician):

1st Two Week Period (1-14 Nov 93):

Mean	95.439	Median	81.000	Mode	60.000
Std dev	70.591	Variance	4983.146		

Valid cases	148	Missing Cases	0
-------------	-----	---------------	---

2nd Two Week Period (7-20 Dec 93):

Mean	76.182	Median	65.000	Mode	30.000
Std dev	45.589	Variance	2078.400		

Valid cases	121	Missing Cases	0
-------------	-----	---------------	---

TOTAL TIME SPENT IN THE ER (arrival time to time released from ER):

1st Two Week Period (1-14 Nov 93):

Mean	138.453	Median	113.500	Mode	90.000
Std dev	82.131	Variance	6745.433		
Valid cases	148	Missing Cases	0		

2nd Two Week Period (7-20 Dec 93):

Mean	109.504	Median	100.000	Mode	90.000
Std dev	54.639	Variance	2985.385		
Valid cases	121	Missing Cases	0		

LAB WORK (Lab time-out to Lab time-in):

1st Two Week Period (1-14 Nov 93):

Mean	62.700	Median	60.000	Mode	60.000
Std dev	37.358	Variance	1395.589		
Valid Cases	20	Missing Cases	0		

2nd Two Week Period (7-20 Dec 93):

Mean	53.353	Median	50.000	Mode	45.000
Std Dev	25.818	Variance	666.552		
Valid cases	15	Missing Cases	0		

X-RAY (X-Ray time-out to X-Ray time-in):

1st Two Week Period (1-14 Nov 93):

Mean	54.529	Median	50.000	Mode	65.000
Std dev	30.000	Variance	923.574		
Valid Cases	51	Missing Cases	0		

2nd Two Week Period (7-20 Dec 93):

Mean	46.353	Median	45.000	Mode	35.000
St dev	20.448	Variance	418.118		
Valid cases	17	Missing Cases	0		

Appendix 17

Preliminary Survey Results of t-Test Comparing November Survey With December Survey

VARIABLE	NOVEMBER SURVEY		DECEMBER SURVEY		t-Value
	MEAN	S.D.	MEAN	S.D.	
AMOUNT OF TIME IT TOOK TO BE TRIAGED					
	30.9865	45.567	16.5372	16.743	3.57 **
AMOUNT OF TIME IT TOOK TO BE LOGGED-IN					
	29.6757	34.129	20.6198	18.453	2.77 **
AMOUNT OF TIME IT TOOK TO BE SEEN BY A PHYSICIAN					
	95.4392	70.591	76.1818	45.589	2.70 **
TOTAL AMOUNT OF TIME SPENT IN THE ER					
	138.4527	82.131	109.5041	54.639	3.45 **
AMOUNT OF TIME IT TOOK FOR LAB WORK TO BE COMPLETED					
	59.5714	38.985	53.9375	24.995	.53 NS
AMOUNT OF TIME IT TOOK FOR AN X-RAY TO BE COMPLETED					
	55.3137	29.995	46.3529	20.448	1.38 *

NS Not Significant

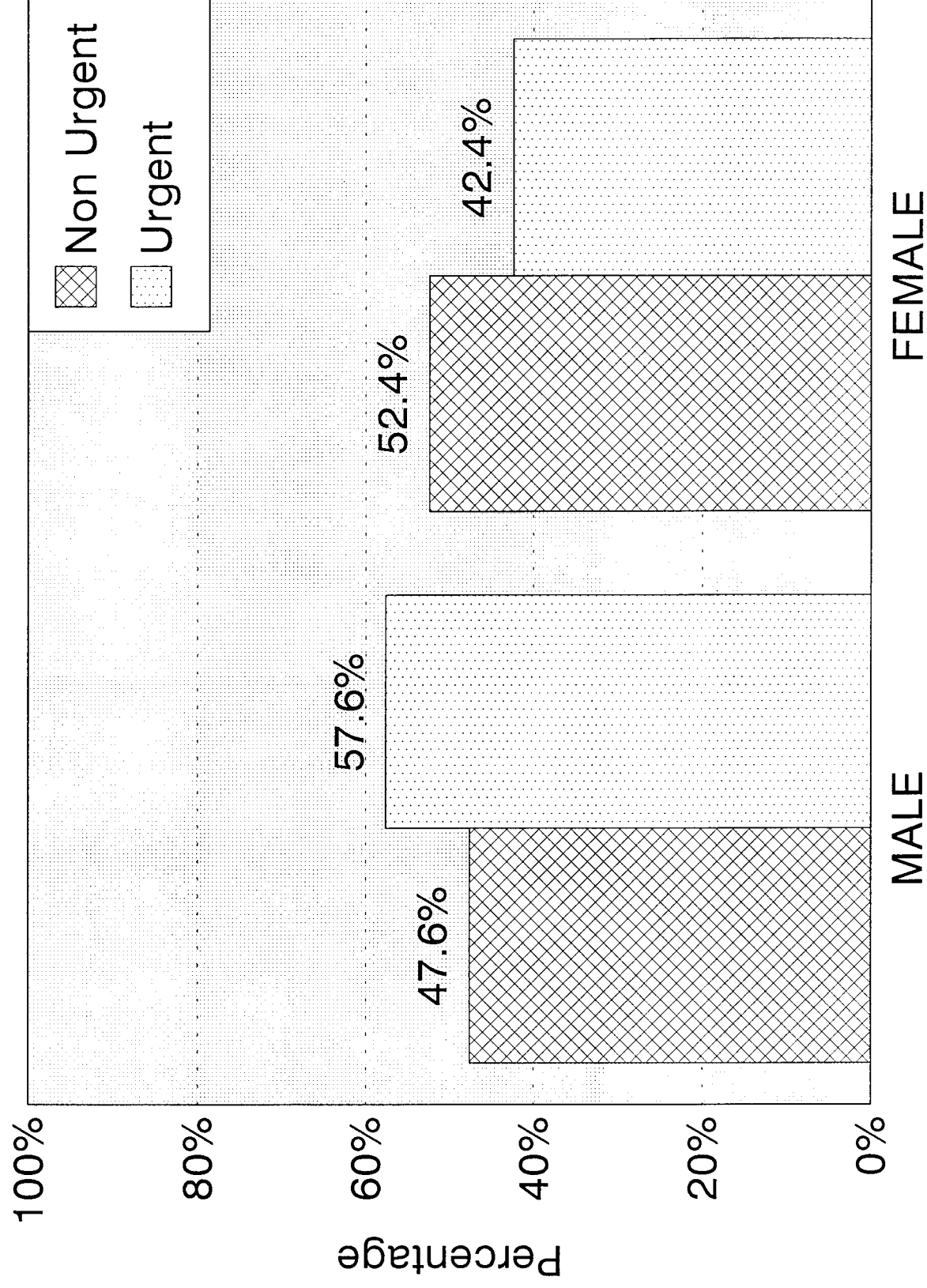
* Significant at $p < .05$ Level

** Significant at $p < .01$ Level

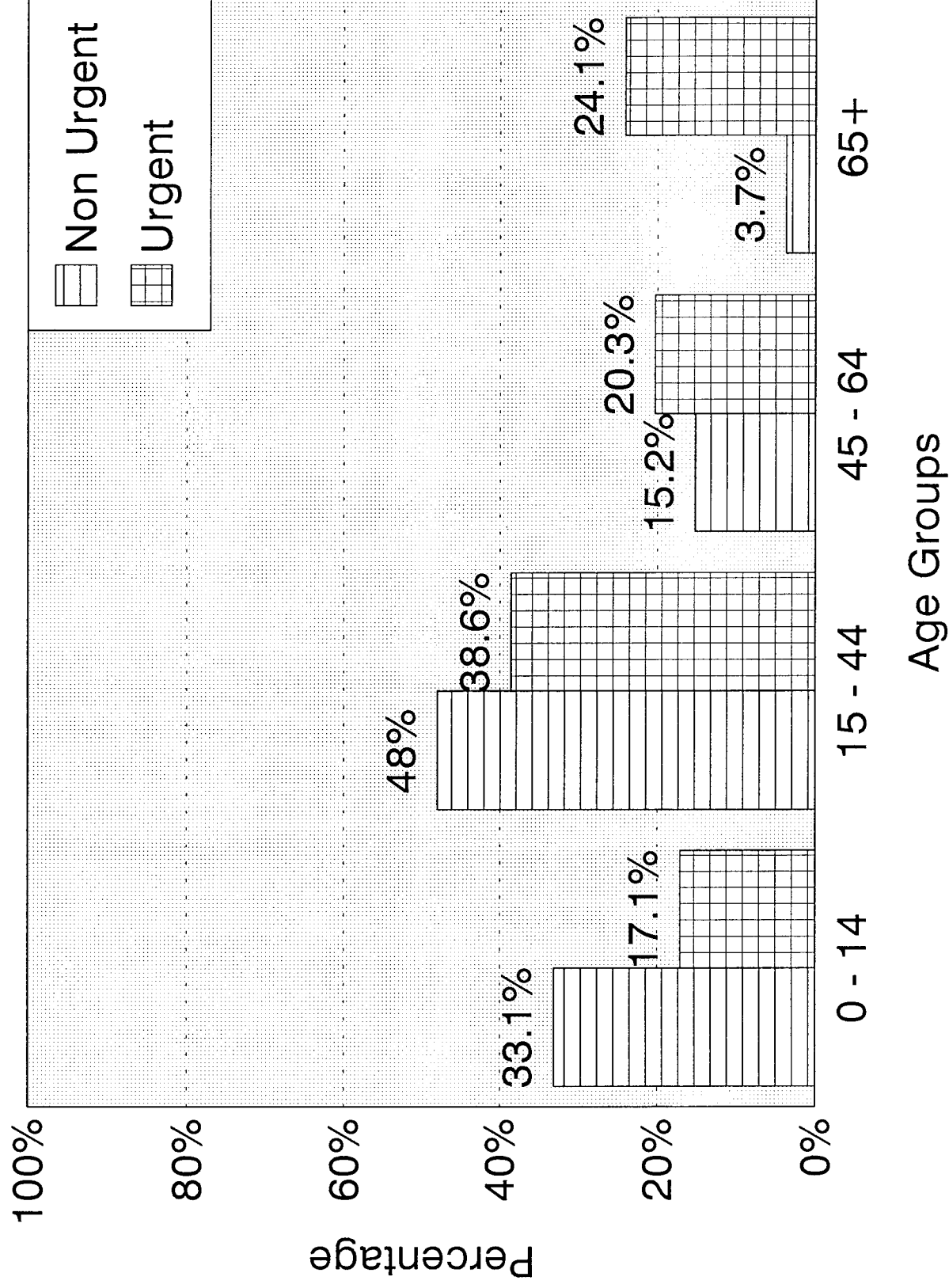
Appendix 18

Graphs Comparing Non-Urgent and Urgent/Emergent
Final Study Survey Variables Used

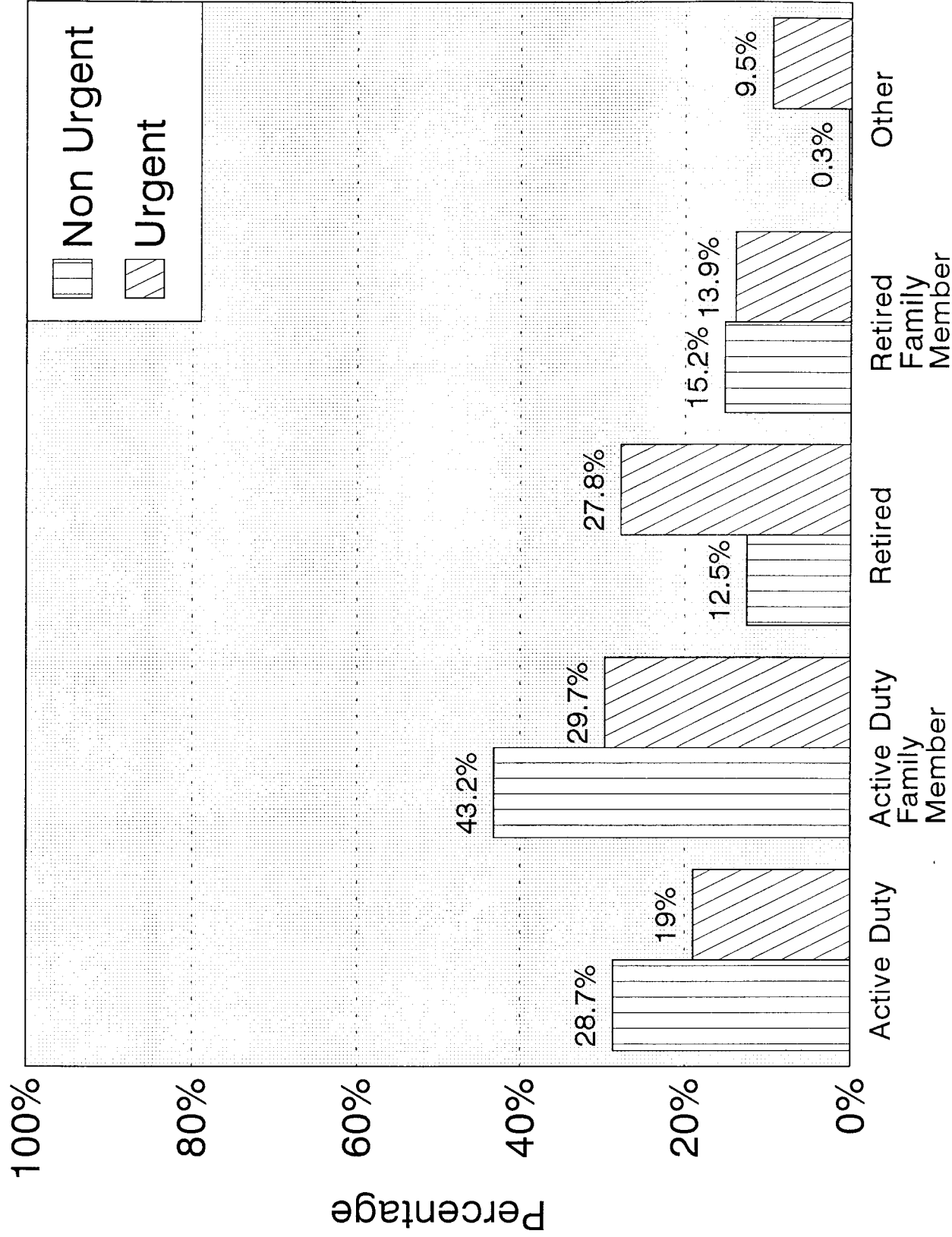
PATIENTS GENDER



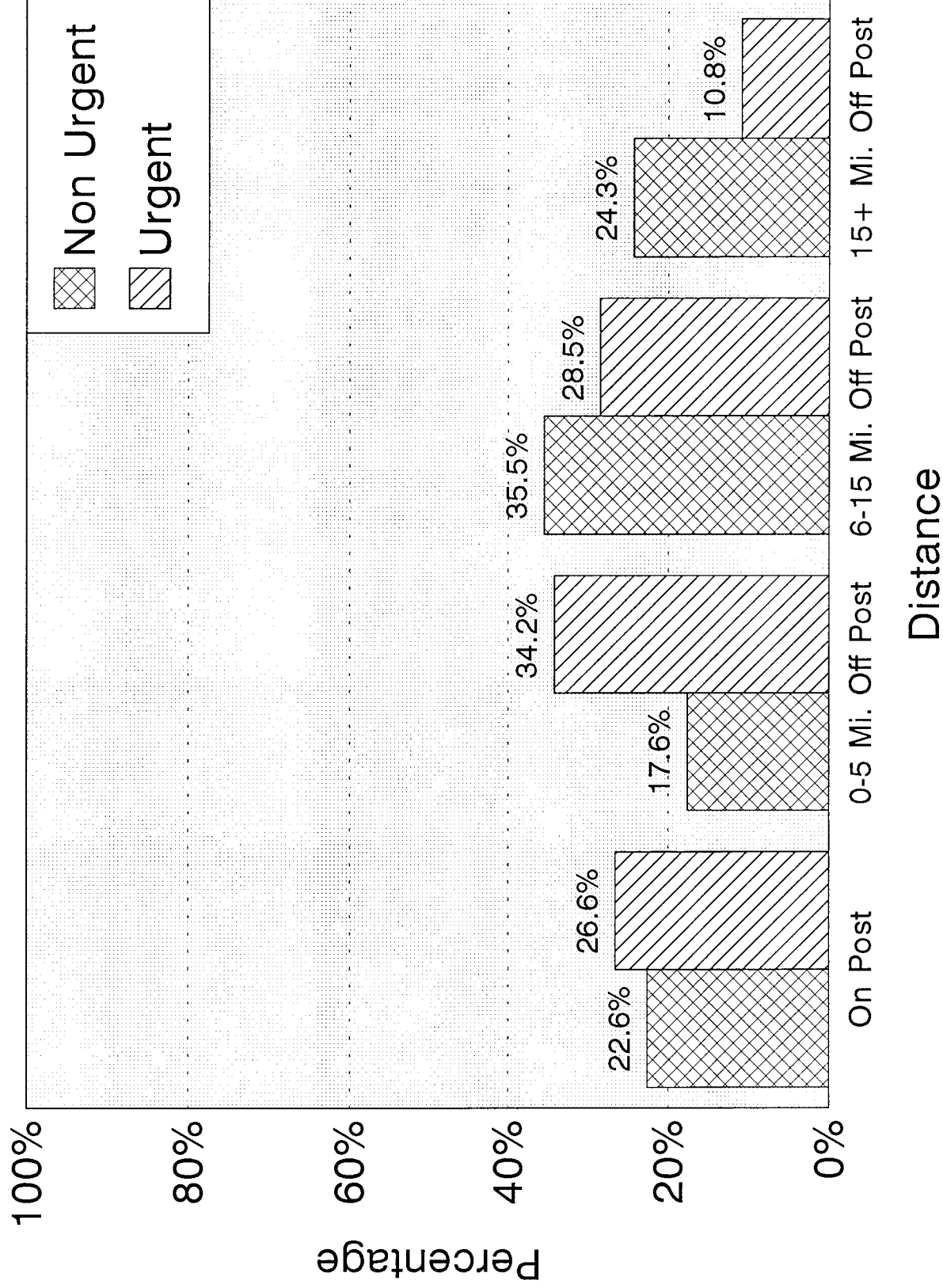
PATIENTS AGE GROUP



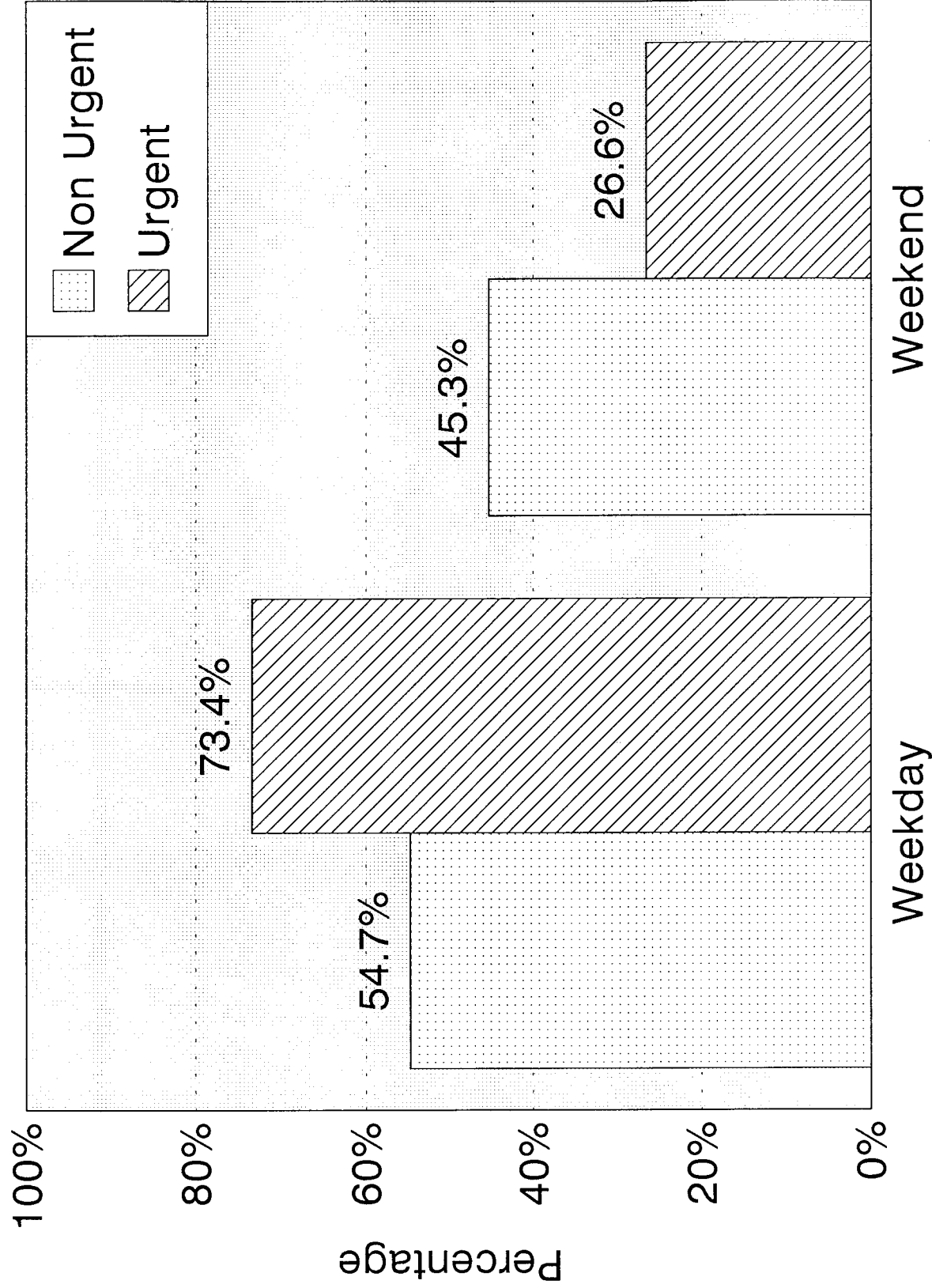
PATIENTS BENEFICIARY CATEGORY



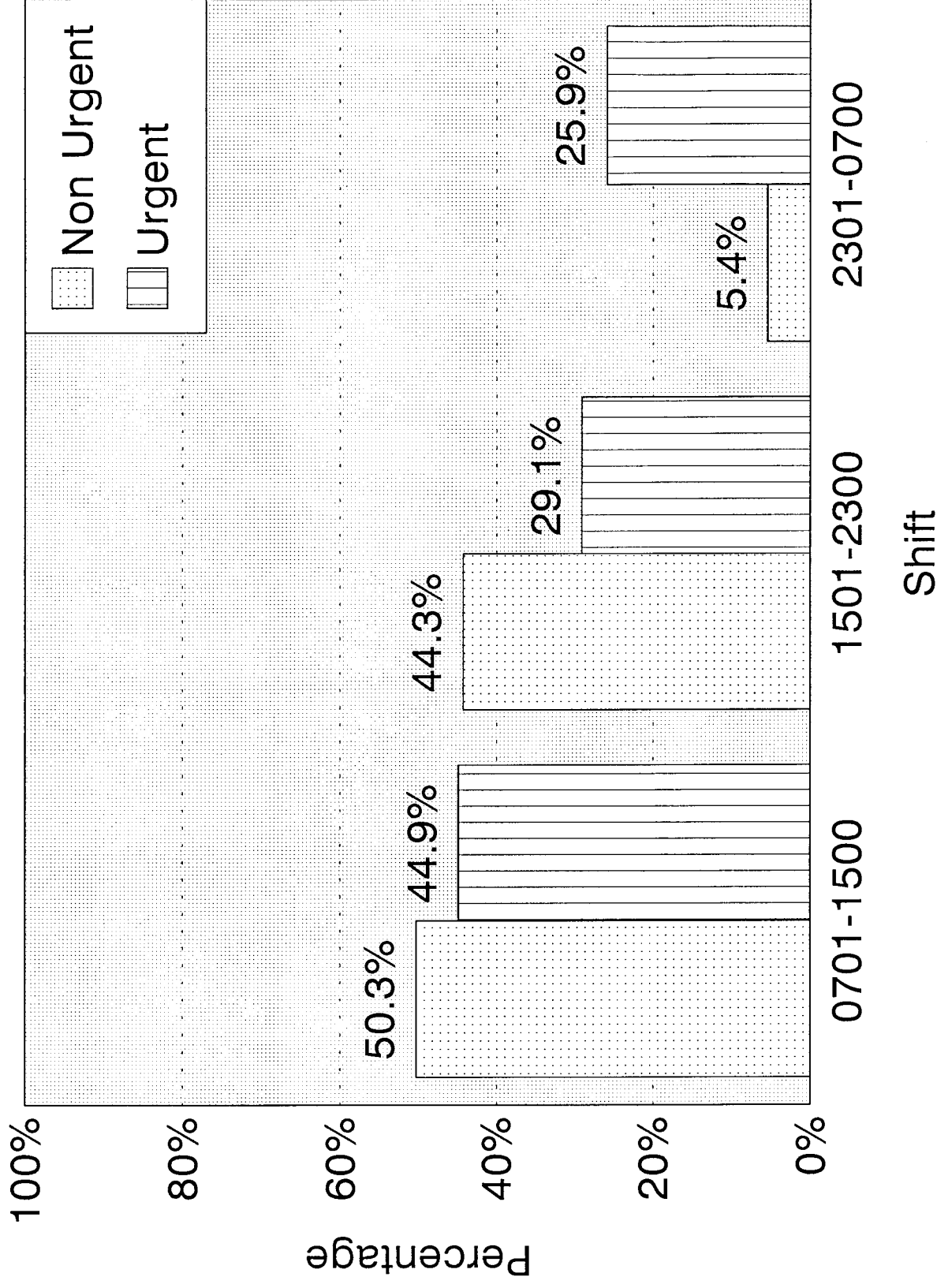
DISTANCE PATIENT LIVES FROM ER



DAY OF WEEK PATIENT SEEN IN ER



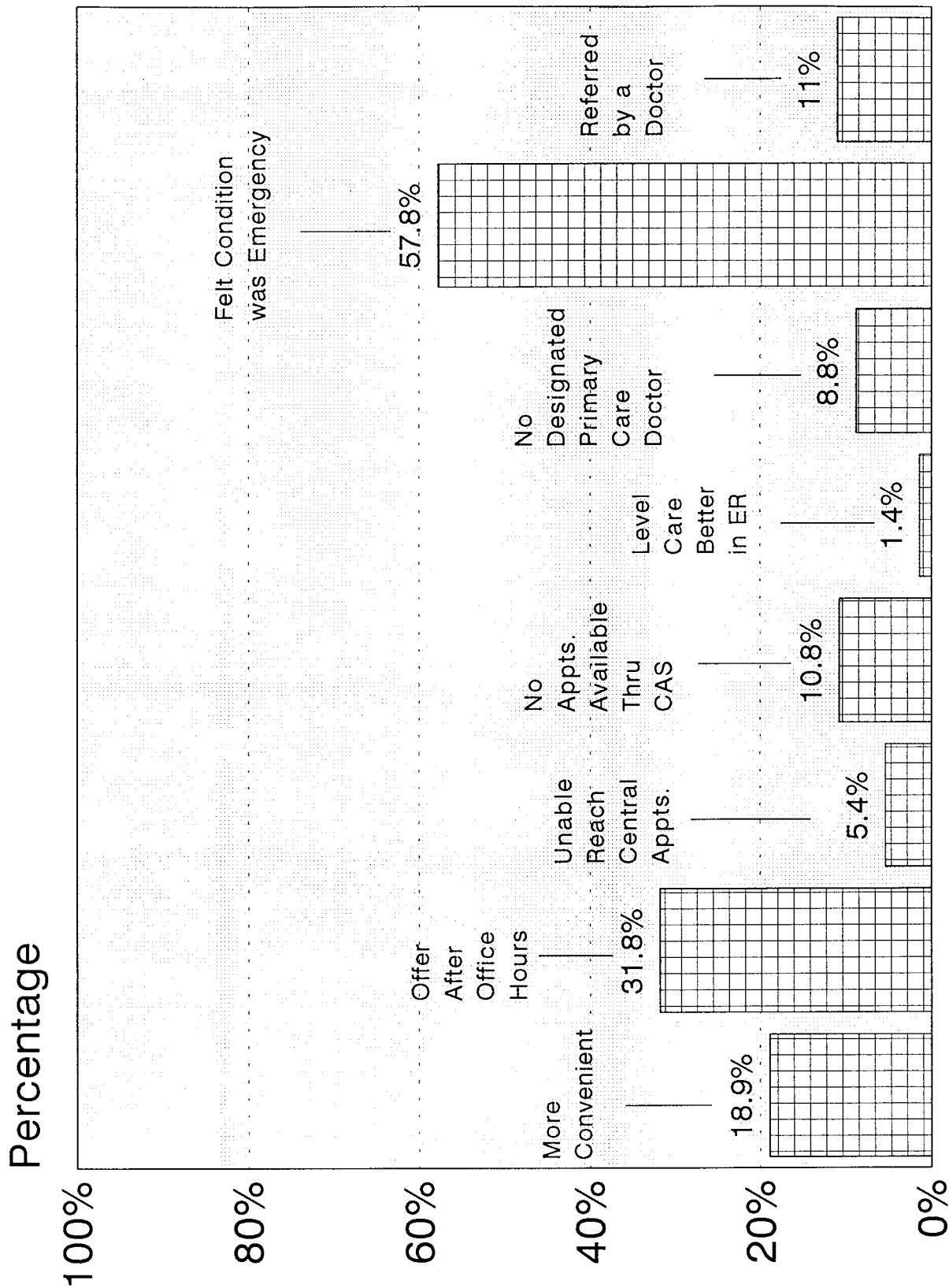
SHIFT THAT PATIENT ARRIVED IN ER



Appendix 19

Graphs of the Reasons Why Non-Urgent Patients Use the Emergency Room

REASONS WHY NONURGENTS USE THE ER



Appendix 20

Final Study Survey Results of t-Test Comparing Non-Urgent With Urgent/Emergent

VARIABLE	NON-URGENT		URGENT/EMERGENT		t-Value
	MEAN	S.D.	MEAN	S.D.	
PATIENT'S GENDER					
	1.5236	.500	1.4241	.496	2.03 *
PATIENT'S AGE GROUP					
	1.8953	.789	2.5127	1.037	-6.53 **
PATIENT'S BENEFICIARY CATEGORY					
	2.1520	1.015	2.6519	1.210	-4.43 **
DISTANCE PATIENT LIVES FROM THE ER					
	2.6149	1.086	2.2342	.965	3.83 *
DAY OF WEEK PATIENT WAS SEEN IN THE ER					
	1.4527	.499	1.2658	.443	4.09 **
SHIFT THAT PATIENT ARRIVED IN ER					
	1.5507	.597	1.8101	.823	-3.50 **

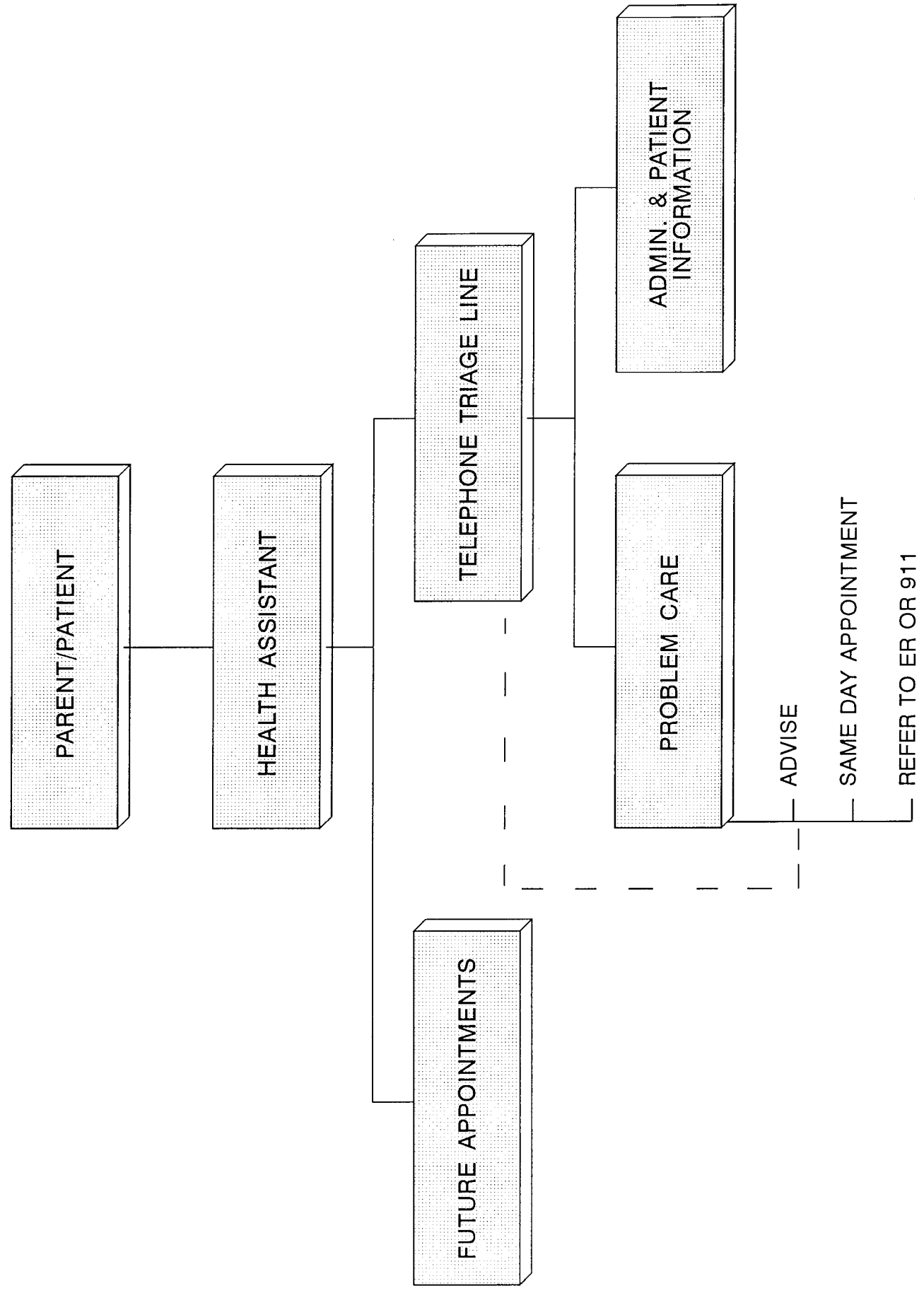
* Significant at $p < .05$ Level

** Significant at $p < .01$ Level

Appendix 21

Recommended Structure of Kimbrough Army Community Hospital Telephone Triage System

RECOMMENDED STRUCTURE OF TELEPHONE TRIAGE SYSTEM



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